FACTORS AND BARRIERS AFFECTING A POST-PEAK OIL AND CLIMATE CHANGE COMMUNITY ACTION PLAN FOR THE CITY OF VENTURA, CALIFORNIA

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SIGNATURE PAGE

THESIS: FACTORS AND BARRIERS AFFECTING A POST-PEAK OIL AND CLIMATE CHANGE COMMUNITY ACTION PLAN FOR THE CITY OF VENTURA, CALIFORNIA

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ABSTRACT

Located between Malibu and Santa Barbara on the Pacific Ocean, the City of Ventura, California has in the past been known for its vast oil production, yet is now known for its surfing breaks, progressive environmentalism and a thriving arts district. As a coastal community conscious about vulnerabilities to the impacts of climate change and resource depletion such as oil, this study looks to follow the 2007 Post-Peak Oil Vision Planning effort with the intention of identifying main factors and barriers affecting the implementation of a follow-up community action plan. Inherent within any study looking at implementing community action are the challenges in understanding human behavior, lifestyle and what motivates change.

Fifteen semi-structured interviews with key decision makers and community members throughout the city were conducted with the intention of identifying barriers against and factors supporting the implementation of a post-peak oil and climate change community action plan. Interview transcripts were analyzed through the content/inductive analysis method, developing overarching themes amongst the interviewee responses to identify barriers and supporting factors specific to the City of Ventura.

Major findings show how important it is to have a champion within local government to facilitate the political will required to procuring and allocating funding toward the planning process including successful implementation. Integration of post-peak oil and climate change action planning guidelines and principals into policy driven documents like the City of Ventura’s General Plan is vital to the success of implementation while also breaking down silos within local government to further integrate throughout all departments. Educating the wider community to facilitate the awareness required for positive behavioral and lifestyle change increases the capacity of people and communities to fully participate and create buy-in leading to successful implementation. Strong community partnerships, information sharing and deep community participation set the foundation for implementation to be successful.
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CHAPTER 1: INTRODUCTION

Human settlements are faced with increasing pressures as they grow and expand and evolve with time. Arguably two of human civilization’s more urgent and irreversible issues, if left unaddressed, are peak oil and climate change. How will we respond? How will we need to re-imagine and re-design the built environment of our communities in order to adapt to the changes ahead? And what are the barriers we face in creating change and the factors that will help influence how we implement these changes in order for our communities to be more adaptive and resilient? This research is an attempt to look at and identify these factors in the City of Ventura, California which function for and against moving from vision planning towards action planning and implementation in the face of a post-peak oil and climate change future.

Identifying Factors Affecting Sustainability Action Plans in the City of Ventura

This research on factors affecting a post-peak oil and climate change community action plan for the City of Ventura was generated from a previous Cal Poly Pomona, Department of Landscape Architecture, 606 Studio project entitled Transforming Urban Environments for a Post-Peak Oil Future: A Vision Plan for the City of San Buenaventura (Chen, Deines, Fleischmann, Reed & Swick 2007). With support and direction from City of Ventura Council Member, Brian Brennan, it was determined that a focus on identifying factors which affected the process of moving from a vision plan to an action plan and implementation was the most valuable for the City of Ventura to move forward in positioning itself as a more sustainable community.

Meetings with City of Ventura officials, including environmental specialists and the City Manager, determined this course of research could be of great benefit for the City in their sustainability planning efforts. Once the research method for data collection was determined, and with Mr. Brennan’s support and insight, interviewees for semi-structured interviews were identified and contacted. Transcripts from the interviews provided the ability to perform an inductive analysis, a form of content analysis, by coding and then grouping key terms and
concepts into categories resulting in the identification of key factors affecting the creation, adoption and implementation of a post-peak oil and climate change community action plan for the City of Ventura. These key factors are grouped into two categories, barriers and supporting factors.

Identification of key factors and barriers creates a probability for the City of Ventura’s community action planning process to produce and create the changes and effects that it intends to facilitate. A community inventory of key influential factors has been completed, which can inform and drastically improve an action plan’s success by planning for barriers the community may face, while highlighting the factors that will help support the action and implementation needed as outlined by the City’s General Plan.

With plans being developed to address the impacts of post-peak oil and climate change, many lack a comprehensive approach to mitigation and adaptation through the necessary practical applications to achieve successful implementation of community action plans. Scenario planning is a common precursor to action planning, and offers an approach to highlight major forces of influence while working to determine a set of future possibilities for which an action plan can develop a series of guidelines and programs to support the variability between the future scenarios.

**Theoretical Framework for this Study**

A transformative action plan that can mitigate and adapt to the impacts of peak oil and climate change, is one that institutes guidelines of resiliency (Masterson, Peacock, Van Zandt, Grover, Schwarz & Cooper 2014, Beatley 2009, Wheeler 2008). The transformative action plan puts into action activities that enable a community to develop the capacity to absorb changes and yet maintain the ability to rapidly recover from some form of impact or shock, and not just to the same form, function, structure, or qualitative state that it was before, but improved through the notion that the resilient community has the ability to also learn from experiences and adapt or

A form of resiliency planning that has become popular across the globe is Transition Town Planning. Also known as Transition Initiatives, it is a form of community capacity building through both a bottom-up and top-down approach initiated in the U.K. to look directly at the twin challenges of peak oil and climate change through planning for an energy descent future. The combination of top-down and bottom-up approaches has been shown to be particularly effective in creating resilient communities (Masterson et al. 2014, Measham, Preston, Smith, Brooke, Goddard, Withycombe & Morrison 2011, Hopkins 2008).

Coastal communities face unique threats and hazards from post-peak oil and climate change given their proximity to the ocean (Masterson et al. 2014, Beatley 2009). With some of the highest urban densities found in coastal areas, growth rates and short-sighted land use patterns have led to degradation of the very ecosystems that provide resilience to those communities (Beatley 2009, IPCC 2007). With the City of Ventura situated as a coastal community, it is vital that a coastal community resilience planning model be closely reviewed and integrated into all forms of planning for post-peak oil and climate change.

Once sets of scenarios are developed and resiliency is an agreed-upon key component and driving force within planning outcomes, it must be made actionable. Action plans enable communities to move beyond the realm of ideas and toward meeting the goals set forth in their vision plan (Prashar, Shaw & Takeuchi 2013, Rosser 1970). Action plans provide step-by-step activities that include what specific actions will occur, who will carry them out, by when will they be accomplished, how long they will take, what resources are needed to carry them out, and who should communicate what information to enable the actions to be successful (Malcolm 1998). Community-based action planning is a highly participatory approach that aims to develop specific community-led actions and initiatives (Shapiro 2011).
These frameworks for planning, and more specifically for moving from visioning to community action, are beneficial for the City of Ventura and all coastal communities to adopt and implement in facing the effects of post-peak oil and climate change. However, these planning processes are not enough on their own to create successful measures or provide the basis for implementation of the plans themselves. Further examination of models that address implementation is necessary. Therefore, a review of models for both individuals and communities altering their lifestyle and changing behavioral patterns is essential for the success of any plan to meet its goals and prepare a community for the impacts of post-peak oil and climate change.

Ajzen and Fishbein’s Theory of Planned Behavior, also known as Reasoned Action, looks at an individual’s behavior as being predicted by one’s intention to perform the behavior. Though Ajzen and Fishbein show that a change in behavioral intention is necessary but not an immediate cause of actual behavior, changes in behavior are seen first in individual beliefs, attitudes and norms while acknowledging that other variables such as demographics, environment, personality and others, influence intention and actual behavior (Ajzen 1991, Mullen, Hersey & Iverson 1987, Ajzen & Fishbein 1980).

Bandura’s Social Learning Theory states that individual behavior is learned from a cognitive process of observational learning within a social context, and that individual behavioral change is neither driven by inner forces of self-discovery nor by environmental influences. Social Learning Theory is based upon three areas of governing processes that cause individual behavioral change:

1) Behavioral change as the product of direct experiences through observation of other people’s behavior and its consequences for them. New patterns of behavior form from this direct experience or by observing the behavior and its consequences to others.

2) Cognitive capacity to foresee the probable consequences of different actions and alter one’s behavior accordingly. Behavioral change is not realized when the relationship between one’s actions and its consequences are not recognized.
3) Individual behavior is controlled to some degree through the self-regulative influences of consequences to specific actions through stimulus control, cognitive control and reinforcement control (Bandura 1977, Bandura 1971).

Self-Efficacy is a belief system by which an individual believes they can produce desired effects by their own actions as imperative in order for them to act or to persevere in the face of difficulties. It is the core belief that an individual has the power to produce changes by their own actions. Self-efficacy beliefs are the foundation from which people choose which challenges to undertake, how much effort to invest in their pursuits, and how long to persevere in the face of difficulties (Bandura 1999, Bandura & Ozer 1990, Bandura 1982, Bandura 1977).

The Health Belief Model is a model for creating individual behavioral change from unhealthy lifestyles to healthy living through education, increased awareness and capacity building of healthy lifestyles. Since individuals encounter health challenges during their lifetime, individual response to these challenges shapes the outcome of lives and communities. The Health Belief Model consists of the following dimensions: perceived susceptibility, perceived severity, perceived benefits and perceived barriers. The model asserts the readiness to take action stems from a perceived threat of an individuals perceived susceptibility to that threat and its perceived potential severity. Individuals behavioral action is evaluated based on an estimate of the potential benefits of an action to reduce susceptibility or severity (Mullen, Hersey & Iverson 1987, Bandura 1986).

Individual Motivation, also known as Awareness of Threat, is another model that creates behavioral change on an individual level. Within the health field, often an individual envisions their children and loved ones being affected by their condition if they do nothing about their medical condition; they take action to change their behavior for the better (Groppel 2011).

Models for creating behavioral change on a community level include the healthcare and community activation sector. Community behavioral change through community activation is created through organized efforts to increase community awareness and consensus about a
problem that brings together community-wide and coordinated effort to create change in the social and physical environments of a community (Nutbeam 2000).

The PRECEDE (Predisposing, Reinforcing, and Enabling Constructs, in Educational Diagnosis and Evaluation) model, like the health belief model, focuses on behavior that is related to health but differs because it does not view behavior as a direct outcome of health. The PRECEDE model looks at prebehavioral factors including predisposing factors (personal preference and prior motives), enabling factors (objective characteristics of a community that facilitate action and may precede motivation) and reinforcing factors (rewards or punishments) (Mullen et al. 1987).

Health and community activation programs have relied primarily on a communication and education approach, which has failed to achieve substantial and long-term sustainable results in terms of behavioral change. Therefore, looking beyond behavioral change models that rely solely on communication and education and identifying a more comprehensive approach is extremely important. For example, the effort to communicate to people the benefits planning a resilient community and the need to take individual action requires a more comprehensive approach. This approach includes not only the communication of the risks of current behavioral actions, but implements strategies to change individual and community actions, behaviors and policies and to change acceptability of unsustainable behaviors. This more complete and comprehensive approach not only addresses individual behaviors, but also the underlying cultural, social and environmental influences of the unhealthy behavior (Nutbeam 2000).

Achieving sufficient levels of literacy on an individual level, builds the overall capacity of a community to respond and make changes it requires to adapt to any situation (Nutbeam 2000). These different levels of literacy include a basic or functional literacy (basic skills to function effectively in everyday situations), communicative or interactive literacy (advanced cognitive and literacy skills used together with social skills to actively participate in everyday activities), and critical literacy (advanced cognitive skills together with social skills can be
applied to critically analyze information and use it to exert greater control over life events and situations) (Nutbeam 2000).

Community extension programs are another example of community-scale models for creating behavioral change through formalized institutions (Brugger & Crimmins 2015, Milburn, Mulley & Kline 2010). Community extension programs are a pre-existing model that can provide an infrastructure already set in place to help increase a community’s capacity to respond to the demands of resiliency preparedness in the face of post-peak oil and climate change. At the core of extension programs is the dissemination of local knowledge and information sharing of ideas through local experts and community members. This is a holistic, participatory model that is designed to encourage and increase independence and self-reliance in order to foster positive behavioral change within a community (Baker 1989).

The environmental, or green, movement is also an example of a community and cultural-scale model for behavioral change. The growth in environmental destruction awareness of the 1970’s helped society internalize and recognize that serious behavioral change was necessary. A new cultural mission was born and called for action in individual behavior to change for a cleaner and more sustainable environment (Groppel 2011).

These supporting theories and models aid resiliency planning in moving from visioning to action oriented goals and implementation guidelines while being supported by models that help sustain the behavioral change required to meet the overall goals and vision. While considering the current perceived model of planning process for the City of Ventura, it is important to consider the review of the planning processes and models for individual and community change that can be embraced by the City of Ventura to successfully complete, adopt and implement a post-peak oil and climate change community action plan.

Levels of influence for creation, adoption and implementation exist within a multitude of scales, including federal, state, regional, community, social and individual. An existing planning model and its perceived gaps are identified below, offering potential areas in which barriers and
factors function, and how a possible post-peak oil and climate change action plan can be integrated into existing planning for the City of Ventura.
Figure 1: Initial Planning Model for Resilience: Post-Peak Oil & Climate Change
Research Outcomes

Some key barriers identified from this study included funding needed to generate successful plans for action, but also education and awareness within the general public, as well as a lack of leadership from decision makers in local government. Infrastructure needed to aid in the transition to a more eco-mobile friendly community such as mass transit, bicycle infrastructure and overall walkability does not exist. Another important barrier identified is the lack of peak oil and climate change adaptive measures integrated into current City of Ventura planning, and also the lack of accountability for plans already adopted. Perhaps the biggest barrier identified is the level of apathy within the community at large to do the right thing and change behavior patterns. This connects to the identified barrier of a basic resistance to change.

Supporting factors identified include the overall and collateral benefits of planning for post-peak oil and climate change. A community that plans for smart growth within the carrying capacity of its resources also becomes a healthier community with a vibrant local economy and culture while protecting the local natural resources that it relies upon. Factors identified that support the successful creation, adoption and implementation of post-peak oil and climate change adaptation include effective and values-based communication that would open the door for positive discussion on how to increase the community’s adaptive capacity to handle the changes ahead, while integrating the necessary feedback loops to keep the community improving towards sustainability into perpetuity. Other existing supporting factors consist of a community that is progressive, highly educated, aware of big-picture issues with a heavy desire to plan ahead and leave a better world for future generations to live in. Its siting as a coastal community identifies the City of Ventura as not only vulnerable to the effects of peak oil and climate change, but it also offers an opportunity to be a leader in planning and implementing measures brought about by a successful post-peak oil and climate change community action plan. Existing grassroots community groups working toward similar goals, coupled with a community that is generally very civic-minded and engaged in community politics and participatory planning processes
provides a positive sense of community ownership and passion for being involved. From an existing planning perspective, the biggest leverage point identified is the City’s control over land use and how effective such a community action plan could be and should be, if folded into the City’s General Plan. This reflects the historical interest and commitment to smart growth and urban infill development. Being folded into the General Plan would make sustainability integrated, instead of isolated, therefore providing accountability. Politically, many thought that the local council was progressive and forward thinking, and combining that with state legislation like AB 32, SB 375 and other existing planning precedents like the Ahwahnee Principles, provides a framework that supports the City of Ventura as a possible model for other coastal communities to create, adopt and implement a community action plan for post-peak oil and climate change. Below is a list of the final barriers and factors summarized from the data collection results, as well as the planning model including final barriers and factors.

<table>
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<td>Human Habit/Culture</td>
<td>Infrastructure</td>
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<td>Education Awareness</td>
<td>Future Legacy</td>
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<tr>
<td>Complexity</td>
<td>Environmental Ethics/Values</td>
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<tr>
<td>Consequences/Rules/Laws/Rewards</td>
<td>Individual Personal Beliefs</td>
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Table 1: Final Barriers and Factors
Planning Model for Resilience: Post-Peak Oil & Climate Change

Barsers:
- Community
- Economy
- Planning
- Beliefs & Awareness
- Politics
- Lifestyle
- Education Awareness
- Complexity
- Consequences/Rules/Laws/Rewards

Creation of Change (Physical & Social)

Policies, Laws, Regulations, Rewards, Incentives

Monitoring + Assessment (Measurable Metrics)

Feedback Loop

Factors Supporting:
- Planning & Design
- Community Identity & Infrastructure
- Community Participation
- Politics
- Coastal Community
- Economics
- Benefits
- Environmental Ethics/Values
- Infrastructure
- Future Legacy
- Individual Personal Beliefs

Planning & Design
- Community Identity & Infrastructure
- Community Participation
- Politics
- Coastal Community
- Economics
- Benefits
- Environmental Ethics/Values
- Infrastructure
- Future Legacy
- Individual Personal Beliefs

Planning & Design
- Community Identity & Infrastructure
- Community Participation
- Politics
- Coastal Community
- Economics
- Benefits
- Environmental Ethics/Values
- Infrastructure
- Future Legacy
- Individual Personal Beliefs
CHAPTER 2: LITERATURE REVIEW

“In a world that changes too rapidly for prediction to be accurate, scenarios are gaining credibility as effective tools to prepare for an uncertain future, alter mental models, test decisions, and improve performance in a dynamic environment”.
-Thomas Chermack, 2005

Introduction

Resiliency for climate change and peak oil has emerged as one of the 21st century’s top planning and design challenges (Intergovernmental Panel on Climate Change (IPCC) 2007). But it is far from clear how local governments can best address the impacts through planning processes. As of 2009, more than 1000 local governments have joined the Cities for Climate Protection (CCP) campaign that requires a plan be developed and a five milestone process of measurement, commitment, planning, implementing and monitoring take place (International Council for Local Environmental Initiatives 2008).

With more than a decade of local initiatives being developed, many lack a comprehensive approach to mitigation and adaptation (Wheeler 2008). “Plans are of course neither necessary nor sufficient for action” (Wheeler 2008, pg. 482); however, if done correctly they have the capacity to establish an ongoing framework for action in which needs are analyzed, options are developed, the public is involved, progress is evaluated and feedback loops are integrated into updating actions as circumstances evolve (Wheeler 2008).

Considerable work and research has been done in the resiliency, peak oil and climate change contexts to calculate vulnerability and adaptive capacities to human settlements and their built environments, and on evaluating hypothetical adaptations, yet the practical applications of this work are not yet readily apparent, including the development of planning procedures to activate the successful implementation of community action campaigns (Smit & Wandel 2006). Of the local government plans that have been developed and adopted, it is difficult to know how
many elements of the actions have been implemented because very few jurisdictions have issued progress reports or evaluations (Wheeler 2008).

This research looks at the issues and opportunities affecting the creation, adoption and implementation of a post-peak oil and climate change action plan for the City of Ventura, California. Action planning allows cities to prepare for and absorb potentially devastating changes and impacts due to a changing climate and inappropriate energy sources. One approach to action planning comes from adaptive capacity building, also known as resiliency (Masterson et al. 2014, Tierney 2014, Comfort, Boin and Demchak 2010). For capacity building to be most effective, efforts on all levels of government and public participation are required. Civic and grassroots level participation as well as policy and regulatory initiatives on the national and state level are essential for setting the foundation for any community to successfully adapt and move forward into a post-peak oil/climate change era (Masterson et al. 2014, Lerch 2007).

The grass roots and non-profit sectors have always led in initiating capacity building for resiliency. Concerns about the effects of environmental degradation on human health date back to 1962 and Rachel Carson’s *Silent Spring* (Carson 1962). The first Earth Day on April 22, 1970 was created to inspire the public to change their behavior and to create policy changes in order to respect natural systems (Earth Day Network 2016). Earth Day became a public forum for existing and newly forming non-profit organizations to publicize the impending impacts of massive natural resource depletion.

From 1970 to 1972, a small research team from the Massachusetts Institute of Technology (MIT) used system dynamics theory and computer modeling to analyze the long-term causes and consequences of growth in the world’s population and material economy to answer such questions as: *Are current policies leading to a sustainable future or to collapse?* (Meadows, Meadows & Randers 2004). Through examining five variables in the model (world population, industrialization, pollution, food production, and resource depletion) the team was able to compare the ecological footprint of humans to the carrying capacity of the planet. Their research
resulted in the publication of *The Limits to Growth* (Meadows, Meadows, Randers & Behrens 1972). This was the first examination of, and justification for, resiliency planning with full awareness that our growth and quality of life depends upon limited and finite resources.

From events like Earth Day and from the research that informed the pivotal work in *The Limits to Growth*, environmental community-based organizations such as The Nature Conservancy, and even businesses with environmental concerns such as Patagonia, built upon the resulting momentum to reinforce their missions (Meadows, Meadows & Randers 2004). Non-profits are considered the ‘first responders’ to the concept of actively planning for resiliency and adapting to natural resource depletion (Meadows, Meadows & Randers 2004). The effects of climate change and post-peak oil look different across communities, states and nations, therefore, a local community’s ability to successfully plan and act upon building capacity for resiliency lies within its local population and its community-built organizations.

**Planning Influences: Scenario, Resilience, and Action Planning**

Human settlements in constantly changing environments need techniques to plan ahead under conditions of considerable uncertainty where flexible strategic responses need to be developed. Scenario, action and resiliency planning offer the possibility of achieving these aims (Phelps, Chan & Kapsalis 2001). Scenario planning is often seen as a precursor to action planning.

One aim of the scenario planning process “is not so much to have one scenario that ‘gets it right’ as to have a set of scenarios that illuminates the major forces driving the system, their interrelationships, and the critical uncertainties. The user can then sharpen their focus on key environmental questions, aided by new concepts and a richer language system through which they exchange ideas and data” (Wack 1985, pgs. 9-10).

In contrast, action planning develops a series of guidelines and programs to support change in order to better cope with one or more of the scenario shifts.

Scenario planning and action planning are within the field known as future studies. It is suggested that all future studies respond to one of 3 questions: “What will happen?”, “What can
happen?”, and “How can a specific target be reached?” The three categories are called predictive, explorative and normative scenarios (Börjeson, Höher, Dreborg, Ekvall and Finnveden 2006). Scenario planning encompasses predictive and explorative scenarios. Action plans are normative scenarios, which are divided into preserving and transforming scenarios. Preserving scenarios respond to the question: “How can the target be reached, by adjustments to the current situation?” and transforming scenarios to “How can the target be reached, when the prevailing structures block necessary changes?” (Börjeson et al 2006). Known to many as Business-As-Usual (BAU), most “final plans and strategies remind [us] of normative preserving scenarios since they are future-oriented and try to fulfill certain goals, but most often without changing societal structures. In transforming scenarios, the goals are instead seen as difficult to reach within today’s structures and major societal changes are therefore seen as necessary” (Larsen & Gunnarsson-Ostling 2009, pg. 261). Predictive and explorative scenarios allow the formulation of transformative action plans.

**Scenario Planning**

By planning for a strategic response to a set of possible scenarios, the concept of ‘wicked problems’ is at the forefront for a successful action plan. A wicked problem is a problem that is difficult to overcome due to its incomplete and changing requirements that are often difficult to recognize, and its complex interdependencies that can often create other problems in the effort to solve one aspect of the wicked problem (Rittel & Webber 1973). Thus, wicked problems cannot be solved by the application of standard methods, they demand only creative solutions (Conklin, Basadur & VanPatter 2007). Wicked problems occur with multiple stakeholders sharing differing perspectives on the problem and their perceived solutions, while the problem also requires a great number of people to change their mindsets and lifestyle (Hulme 2009, Conklin 2005).

Post-peak oil and climate change are considered ‘super wicked problems’ as they relate to the agent trying to solve it by the following four features unique to ‘super wicked problems’ that reinforce, and direct our attention to, the need for a new epistemological and theoretical
orientation to policy and planning developed by Levin, Cashore, Bernstein and Auld (2010): time is running out; no central authority; those seeking to solve the problem are also causing it; and policies discount the future irrationally or hyperbolic discounting (Levin et al 2010). These complex issues require a multitude of stakeholders to work together in solving such a super wicked problem through a scenario planning approach to developing a successful action plan for community resilience (Lazarus 2009). “The aim [of scenario planning] is often to create a foundation for a discussion on long-term development and goals. Scenarios are not policies as such, but they are often used as foundations for making policy decisions” (Larsen & Gunnarsson-Ostling 2009, pg. 261).

Dissatisfaction with bureaucratic formal planning and forecasting techniques has resulted in the development and widespread use of scenario planning (Wack 1985b). Instead of just looking at one set of influential variables and determining one potential outcome, scenario planning looks at a multitude of outcomes, or scenarios.

**History of Scenario Planning**

The first known use of scenario planning came following World War II as the U.S. Air Force imagined what its opponents might do, and to prepare alternative strategies (Schwartz 1991). “After the war, the RAND Corporation was set up to research new forms of weapons technology. RAND’s Herman Kahn pioneered the technique of “future-now” thinking, aiming through the use of detailed analysis plus imagination to be able to produce a report as it might be written by people living in the future” (Ringland 1998, pg. 12). The name comes from the theatrical term ‘scenario’-the script for a film or play. Kahn, in the 1960’s, refined scenario planning as a tool for businesses. From his success in predicting the inevitability of growth and prosperity, he became America’s top futurist (Schwartz 1991).

Though Kahn and the Rand Corporation were responsible for taking scenario planning into the mainstream, the most well known futurist, or scenario planner, was Pierre Wack, known as the undisputed intellectual leader in the area of scenario-based strategic thinking (van der
Heijden 1996). In 1967, Wack was a planner at the London offices of Royal Dutch/Shell, an international oil enterprise in a newly formed department called Group Planning, looking for events that might affect oil prices. The US was exhausting its oil reserves and the Middle East was beginning to flex its political and economic muscle. Wack (1985a) initially suggested that thinking six years ahead did not allow enough lead-time to effectively consider future forces in the oil industry. “Shell began planning for the year 2000. When the Yom Kippur War broke out and oil prices plummeted, Shell was prepared” (Chermack, Lynham, and Ruona 2001, pg. 11). The ability to act quickly has been credited as the primary reason behind Shell’s lead in the oil industry (van der Heijden 1996). Due to Shell’s success with scenario planning process, and because the oil shock was so devastating to views of a stable future, by the late 1970’s the majority of the Fortune 1000 corporations had adopted scenario planning in one form or another (Ringland 1998). In the early 1970’s, Wack took scenario planning to a new dimension. Wack shifted his work from developing scenarios of the future, to that of the ultimate mind-set of decision makers. “Pierre waited for a change in behavior at Royal Dutch/Shell; but no change in behavior came. That’s when he developed his breakthrough: Scenarios, as he later put it, should be ‘more than water on a stone’. To be truly effective, they had to ‘change our managers’ view of reality” (Schwartz 1991, pg.8).

The success of scenario planning was short lived. Due to the major recession and corporate staffing reductions of the 1980’s, use of scenarios was on the decline. It is also speculated that planners over-simplified the use of scenarios, confusing the nature of story telling with forecasting (Chermack et al. 2001, Ringland 1998). “In 1985, Michael Porter led a “back to the basics” approach, suggesting that corporations use external forces as a platform for planning. In this time of evaluating how planning happens, many consulting firms began developing scenario planning methodologies” (Chermack et al. 2001, pg. 12). Huss and Honton (1987) identified three categories in use:
1. **Intuitive logistics:** introduced by Pierre Wack in Harvard Business Review in 1985 and used by SRI (Stanford Research Institute International) and Shell. In 1987, Peter Schwartz co-founded the Global Business Network (a consultancy that specialized in helping organizations apply scenario planning) and continued to build upon the SRI and Shell experience within this method.

2. **Trend-impact analysis:** used by the Futures Group. Trend-impact analysis (TIA) is a simple approach to forecasting in which it uses historical data to produce forecasts by extrapolating such data into the future.

3. **Cross-impact analysis:** implemented by Battelle with BASICS (Battelle Scenario Inputs to Corporate Strategies). Cross-Impact Analysis (CIA) begins from the premise that a multitude of events and the surrounding environment can significantly influence the probability of certain events (scenarios) to occur. CIA works to identify relationships between events and variables, and categorize them as beneficial or detrimental to each other, and are used to determine which scenarios are most possible to occur within a specified time-frame.

Shell continued to have success utilizing the scenario process throughout the 1980’s and slowly, corporations cautiously began to re-integrate the application of scenarios in planning situations (Chermack et al. 2001). By the 1990’s, scenario planning had entered the mainstream, placing it firmly on management agendas (The Management Lab 2016).

**What is Scenario Planning?**

So, what exactly is scenario planning? Scenario planning is “that part of strategic planning which relates to the tools and technologies for managing the uncertainties of the future” (Ringland 1998, pg. 2). They “are stories about the way the world might turn out tomorrow, stories that can help us recognize and adapt to changing aspects of our present environment” (Schwartz 1991, pg. 3-4). They form a method for articulating the different pathways that might exist tomorrow, and allow agencies to find movements down each of those possible paths. Scenario planning is about making choices today with an understanding of how they might turn out in the future. It is about minimizing unpleasant surprises about the future and broadening the span of decision makers’ thinking about different possibilities (Phelps et al. 2001, Wack 1985a).
Though there are many ways in which to define and describe what scenario planning is, they describe numerous future scenario possibilities in which to increase the quality of decision making that will produce resilient outcomes towards multiple scenarios. This cannot happen without a shift in the decision makers’ ability to perceive as Wack (1985, 1985a) describes in his well known and highly regarded articles (Wack 1985, Wack 1985a).

“Scenarios deal with two worlds: the world of facts and the world of perceptions. They explore for facts but they aim at perceptions inside the heads of decision makers. Their purpose is to gather and transform information of strategic significance into fresh perceptions. This transformation process is not trivial – more often than not it does not happen. When it works, it is a creative experience that generates a heartfelt “Aha!” from your managers and leads to strategic insights beyond the mind’s previous reach” (Wack 1985, pg. 3).

Schwartz (1991) further describes this as a process of ‘re-perceiving’.

“In order for people to be prepared for an uncertain future, they need to be able to ‘re-perceive’ – to question their assumptions about the way the world works, so that they could see the world more clearly. The purpose of scenarios is to help yourself change your view of reality – to match it up more closely with reality as it is, and reality as it is going to be. The end result, however, is not an accurate picture of tomorrow, but better decisions about the future” (Schwartz 1991, pg. 9).

This is what Wack (1985a) called ‘the art of re-perceiving’. Wack (1985) notes many executive decision makers made many errors in the process. “Problems resulted from a crisis of perception rather than from poor strategic reasoning. These decision makers’ strategies made sense and indeed were sometimes brilliant – within the context of their limited worldview” (Wack 1985a, pg. 11).

He goes on to state that “in times of rapid change, a crisis of perception (that is, the inability to see an emerging novel reality by being locked inside obsolete assumptions) often causes strategic failure, particularly in large, well-run companies” (Wack 1985a, pg. 11). Opportunities missed because managers did not recognize them in time are clearly more important than failures, which are visible to all. When making decisions, decision makers generally have a natural impatience with analysis and a tendency to want to ‘cut to the chase’. It is easy to get ahead of the process and want to begin strategizing while clarifying the strategic
focus of the scenarios. “The greatest danger in times of turbulence is not the turbulence; it is to act with yesterday’s logic” (Wack 1985a, pg. 11). Therefore, it is an essential piece of the scenario building process to present decision makers with alternate ways of seeing the world and thus allow them to break out of a limited view. Highly relevant information goes unnoticed because, being locked into one way of looking at things, decision makers fail to see its significance.

Good scenario plans should stretch people’s beliefs, degrees of confidence, and problem perception so as to increase the effectiveness of decision making (Schoemaker 1991). However, good planning is insufficient without action. Wilson (2000) calls the scenarios ‘context for action’ and notes that “once executives see that the process both begins and ends with an emphasis on action, they are more easily persuaded of the true value of scenario planning” (Wilson 2000, pg. 25). Wack (1985a) offers two questions to test the value of the scenarios developed:

1. What do they leave out? In five to ten years, managers must not be able to say that the scenarios did not warn them of important events that subsequently happened.
2. Do they lead to action? If scenarios do not push managers to do something other than that indicated by past experience, they are nothing more than interesting speculation (Wack 1985a).

This aids in the direct impact of organizational performance and can provide a context for ongoing monitoring or assessment of plausibility, targeted at continuous learning about strategic options, and therefore providing the context for more informed decision-making (Chermack 2005).

With business applications developing mainly out of practice (van der Heijden 1996, Ringland 1995, Wack 1985a) scenario planning as a field has not had the opportunity to establish strong theoretical roots (Georgantzas and Acar 1995). “The absence of explicit theoretical roots has led to the application of scenario planning as something of a “club members only” philosophy, and there is a strong community of practicing scenario planners who have not the
time to reflect upon the implications of their organizational interventions” (Chermack et al. 2001, pg. 10). In an attempt to bridge this gap in theory development of scenario planning, Chermack (2005) published “an emerging theory of scenario planning” in *Studying Scenario Planning: Theory, Research Suggestions, and Hypotheses* (2005).

**Process of Scenario Planning**


The scenario planning process is not one of linear implementation or providing a single snapshot; its effectiveness lies in stimulating decisions and generating the strategic conversation. This is the continuous process of planning, analyzing the environment, generating and testing scenarios, developing options, selecting, refining and implementing – a process that is itself refined with further environmental analysis (Kourdi Ltd. 2016). The use of images can help to make scenarios more comprehensible (Shaw, Sheppard, Burch, Flanders, Wiek, Carmichael, Robinson, and Cohen 2009, Shell International BV 2008). Some aspects of scenarios may be described with numbers for use in quantitative analysis of policies and strategy, but the richness of scenarios as a strategic tool stems partly from the fact that they can include more intangible aspects of the future (Shell International BV 2008).

**Scenarios vs. Forecasts**

The distinguishing factor for scenario planning is that it is not established by predictions or forecasts; instead it is an exploration that develops selected possible descriptions of the future (Chermack et al. 2001, Phelps et al. 2001). The scenario approach recognizes the inherent
weaknesses in forecasts, and single-outcome methods that essentially aim to predict the future. Instead, scenario planning makes use of multiple scenarios or stories of different futures to underscore the fact that the future is unpredictable, unstable, and inherently filled with uncertainty (Bodwell & Chermack 2009). Decision makers often prefer the illusion of certainty to understanding risks and realities. But in the long run, this preference for denial of uncertainty sets the stage for surprises, shattering the public’s confidence in an action plan’s ability to look ahead and provide resilience in the face of potential risks and realities. Scenario planning allows a community to say, ‘We are prepared for whatever happens’. It is this ability to act with a knowledgeable sense of risk and reward that produces a successful Community Action Plan (Schwartz 1991, pgs. 6-7).

**Areas Utilizing Scenario Planning**

**Land Use-Transportation Scenario Planning**

Land use-transportation scenario planning utilizes “scenario planning as a tool for assessing potential futures and developing effective policy responses” (Bartholomew & Ewing 2009). With its emergence in the 1990’s, the land use-transportation scenario planning practice essentially grafted the military and business approaches onto the more customary planning structures of the continuing, cooperative, and comprehensive (3C) process required by the Federal Aid Highway Act of 1962 and the environmental impact reporting requirements of the National Environmental Policy Act (Bartholomew & Ewing 2009). Bartholomew & Ewing (2009) identified 80 scenario planning projects completed between 1989 and 2003 that used land use as a variable in some fashion, suggesting a trend toward greater use of scenario planning techniques within land use-transportation planning (Bartholomew & Ewing 2009).

**Business Planning**

Most of the current literature written about scenario planning is geared toward business and organizational strategic planning (Chermack 2001). It is geared towards the premise that “the
future of the global business environment will require an even more thorough ability to examine
the forces of change and anticipate possible solutions to potential problems” (Chermack et al.
2001, pg. 7). Business-as-usual strategic planning has been thought to be the solution for coping
with future changes in business organizations, however it has not proven its ability to inform
organization leaders about massive political, environmental, economic and/or societal changes.
However, scenario planning, with a focus on long- and short-term stories about the future,
presents a future landscape that forces their planners to consider paradigms to challenge their
current thinking. Scenario planning has proven to be an effective method for identifying critical
future uncertainties and investigating ‘blind spots’ in the organization (Chermack et al. 2001).
Business-style scenario planning also focuses on influences that extend beyond the control of the
agency doing the analysis (Bodwell & Chermack 2009) to articulate a range of risks and to
develop a commensurate range of responses.

**Climate Change Scenarios**

In just over 100 years, the Earth’s global average temperature has risen by about 1.4° F.
If we are to follow the road of business as usual, “the projected rate of temperature change for
this century is greater than that of any extended global warming period over the past 65 million
years” (Molina, McCarthy, Wall, Alley, Cobb, Cole, Das, Diffenbaugh, Emanuel, Frumkin,
Hayhoe, Parmesan, and Shepherd 2015, pg. 3), and could cause another 4 to 8° F warming before
the year 2100 (Molina et al 2015, IPCC 2007). While climate change continues to be debated, an
increase in average global temperatures of 2 degrees is regarded as inevitable (Lavelle 2015),
leading to irreversible effects.

The Intergovernmental Panel on Climate Change (IPCC) was established by the World
to the widespread recognition that human-induced emissions of greenhouse gases have the
potential to alter the global climate and the natural systems which depend on it. Its role is to
provide an assessment of the current knowledge and understanding about future impacts of all aspects of climate change including areas of the natural and human environment (IPCC 2007).

Climate change planning was hindered by the unavailability and unreliability of climate forecasts or predictions; however, newer models improve predictability (Dessai, Lu and Risbey 2005). “Advances in scenario development…address issues of consistency and comparability between global drivers of change, and regional scenarios” (IPCC 2007, pp 146-147). Climate scenarios have been widely used for the purposes of adaptation planning (Parry & Carter 1998, Carter, Parry, Harasawa and Nishioka 1994). “They are called scenarios – plausible and internally consistent images of the future – because of the considerable uncertainties involved in portraying different development paths, modeling the climate system, etc.” (Dessai et al. 2005, pg. 88). Various impact, vulnerability and adaptation assessments have used climate scenarios to inform adaptation planning, ranging from very localized assessments, to national and regional assessments (Dessai et al. 2005).

**Post-Peak Oil Planning**

**History**

It is clear that our global energy supply and our global climate have been facing and will continue to face radical change in the coming decades (Lerch 2010, Heinberg 2006). Global warming and climate change is widely accepted as a serious problem requiring immediate and far-reaching attention, while the coming decline of global oil production, known as peak oil, is not as widely understood but is just as important to address and plan for (Lerch 2007). Just like climate change, peak oil poses issues that are ultimately that of uncertainty on global, regional and even local levels that we cannot easily predict (Lerch 2007). “Experts may disagree on what these changes mean and how we should respond to them, but it’s important to note that nearly everyone agrees on at least two things: fundamental changes in global oil supply and demand are real and are happening now” (Lerch 2007, pg. 2).
Oil is a non-renewable resource. “Of all the hydrocarbon energy sources (oil, coal, natural gas and lesser sources), it is oil that is most important. It powers 90% of all transportation and is what plastics, pesticides, many chemicals, and a hundred other ‘indispensable’ things are made from. The edifice of human civilization, as it has functioned for a hundred years, it built upon cheap oil” (Ruppert 2009, pg. 3). The ability for the global population to increase at the rate it has since oil was first used, is directly attributed to oil, natural gas, and coal that made it possible to feed, clothe, medicate, house, and transport them (Ruppert 2009).

Peak oil refers to the “maximum rate of the production of oil in any area under consideration, recognizing that it is a finite natural resource, subject to depletion” (Newman et al. 2009, pg. 19). Every oil field eventually declines as it goes through a production cycle of increase-peak-decline. “Although half of the oil remains at the peak in production, the other half of the oil becomes harder to extract [and process], as it increasingly fills with water and requires more energy to be pumped out” (Newman et al. 2009, pg. 19). “Since oil comes from this planet, and this planet is, by definition, a closed system, Peak Oil means that once the top of the production bell curve is reached, no matter how much money, technology, prayer or marketing hype is applied; the planet cannot yield more oil in any following year – only less. And even less the year after that” (Ruppert 2009, pp. 2-3).

Historical data compiled over a century of oil-production experience has shown that production has always followed a bell curve. Oil geologist and physicist Marion King Hubbert introduced the oil production bell-shaped curve with a peak followed by a decline to the scientific world and in 1956 he predicted that the U.S. would peak in oil production in 1970 based on his research and calculations (Newman et al. 2009, Ruppert 2009). Even though he was ridiculed and scorned by the scientific community, he was right. Since 1970, U.S. oil production has been in a steady and irreversible decline (Heinberg and Lerch 2010, Holmgren 2009, Newman et al. 2009, Ruppert 2009, Lerch 2007). Today the U.S. imports around 70% of the oil it needs to function on a daily basis. The same peak is currently happening to global oil production and
continues to decline (Newman et al. 2009, Ruppert 2009). Global discoveries of new oil supplies have been on the decline since the 1960’s, and

global oil production generally has followed the bell-shaped Hubbert curve (apart from reductions due to the three oil crises of 1973, 1979, and 1991), and was on an upward trend until 2005. Since 2006 oil production has plateaued despite there being increased demand around 2 to 3 percent (mainly due to China and India, though together they still only take 12 percent of world oil production while the U.S. takes 26 percent) (Newman et al. 2009, pg. 20).

“Debate among peak oil analysts has now shifted from ‘when’ to ‘at what rate’ the world will decline after we move off the current plateau in production.” (Holmgren 2009, pg. 41).

On a national scale, once a nation peaks in its oil production then a very different set of economic and political factors come into play, as it must look elsewhere to meet growing oil demand. The United States began to import oil after 1970 when its oil production peaked. The U.S. now imports over half of its oil (Newman et al. 2009). “Indonesia and China have recently joined the group of oil-importing nations who were once exporters (over thirty countries have crossed this peak in the past thirty or so years)” (Newman et al. 2009, pg. 19).

The Association for the Study of Peak Oil and Gas (ASPO) believes that the age of peak oil is near, which means that oil is getting more challenging to find and the era of cheap oil is over forever (Ruppert 2009 and Newman et al. 2009). A global peak in oil production is inevitable. “There are various estimates of when the peak will occur but they cluster around the early part of this century. More conservative estimates from government sources in the U.S. and the United Kingdom are saying that oil peak will occur sometime between 2010 and 2020” (Newman et al. 2009, pg. 22). The world oil is peaking.

Peak oil experts and commentators paint visions of the future that range from mildly pessimistic to apocalyptic (Polycarpou 2005). However, no one knows with certainty how much energy will be available at any given point in the depletions era, or how different regions and populations will respond. Regional and local level governments must begin serious planning
based on differing scenarios, with the awareness that changes could come in phases and that any model must adjust to reality as it unfolds (Polycarpou 2005).

Local governments seldom plan to prepare for peak oil, despite the fact that no one disputes that oil is a finite resource (Polycarpou 2005). Polycarpou (2005) asks “if local governments are able to develop response plans for the relatively unlikely event of a terrorist attack, then is it too much to ask that they consider how to respond to the eventual certainty of oil and gas depletion?” (Polycarpou 2005).

**What is Post-Peak Oil Planning?**

With peak oil inevitable, there is a need to develop short-term adaptations for our cities in the face of declining oil production, while we plan for longer-term change to the built environment (Newman et al. 2009, Holmgren 2009). “Acknowledging and responding to the problems related to our automobile dependency challenges every aspect of life. We have spent the past sixty plus years building our cities and rural regions around the availability of cheap oil and now must contemplate a different future” (Newman et al. 2009, pg. 23).

Very few governing bodies are prioritizing resources towards actively planning for a post-peak oil future. Many agencies have appointed tasks forces to develop reports, which include identified local vulnerabilities and recommendations for action such as *The City of Austin’s Energy Depletion Risks Task Force Report* (2009). The City of Portland developed the first local government-led plan for peak oil in its *Descending the Oil Peak: Navigating the Transition from Oil and Natural Gas* (2007) which looked at many aspects of life in the area and how they could be prepared for the end of cheap oil. This was followed by a similar plan for the City of Oakland, *the Oil Independent Oakland Action Plan* (2008). Some, such as the City of Bloomington, have developed more substantial reports, which focus upon the concept of *Energy Descent* in *Redefining Prosperity: Energy Descent and Community Resilience Report of the Bloomington Peak Oil Task Force* (2009). The City of Spokane, has even integrated both peak oil and climate change in their planning document, *Sustainability Action Plan: Addressing Climate Mitigation,*
Climate Adaptation, and Energy Security (2009). The 606 Studio, from the Department of Landscape Architecture at Cal Poly Pomona, developed Transforming Urban Environments for a Post-Peak Oil Future: A Vision Plan for the City of San Buenaventura (2007) for the City of Ventura which was a peak oil plan vision developed prior to an action oriented planning document.


In general, specific post-peak oil planning is few and far between. Energy strategic planning is more common and integrates content on energy reductions and management, but does not call out peak oil specifically or address scenarios for adapting to a post-peak oil world.

Benefits of Post-Peak Oil Planning

Oil production is predicted to decline to approximately 50% by 2050 while climate change imperatives suggest reductions in greenhouse gases of at least 50% by 2050 are needed worldwide (Newman et al. 2009). Remarkably, the two agendas of climate change and peak oil overlap precisely at 50% reduction by 2050 (Newman et al. 2009, Rupert 2009, Lerch 2007). While one is supply driven, the other is demand driven. Either way, we have to find a way to reduce the need for these fuels. For oil, it will mean designing cities in which we drive, transport freight, and fly 25% to 50% less (Masterson et al. 2014, Beatley 2009, Newman et al. 2009). Building will have 50% less fuel for heating and cooling. These reductions provide a unique opportunity to rethink, replan and redesign our cities to meet these goals (Newman et al. 2009).

Electric rail systems offer not only a better way to make a city function without oil but a market-oriented way to restructure the city in its land use patterns to be less car dependent.
Alternative transportation systems generate a sense of hope and pride in a city, along with providing political platforms for politicians to support (Newman et al. 2009).

“Peak oil and climate change present the field of planning an unprecedented opportunity to (help to) shape a more sustainable, healthy, and just urban future. These are challenging times for planners [and designers of the built environment], to be sure, but the chance to make a difference has never been greater” (Newman et al. 2009, pg. xi).

**Challenges of Post-Peak Oil Planning**

The real changes necessary to make communities sustainable and resilient, such as providing significantly greater support for appropriate transit, won’t happen quickly enough (Newman et al. 2009). Corporations with oil interests such as car and tire companies have been reluctant to admit to a peak in oil production due to the potential impact on their share price, through that seems to be changing slowly (Newman et al. 2009, Ruppert 2009). Current political and economic systems that are subservient to corporate/financial interests and an economic paradigm which demands infinite growth is the beast which has driven society headlong into the unyielding steel wall of Peak Oil and the edge of the cliff lying just beyond. Community leadership must operate from the stage of acceptance and must not tailor approaches to those who are in denial, who are angry or trying to bargain for short-term profits, or are depressed. This is the great failure of the media, politics and economics in the current paradigm (Ruppert 2009).

Communities at large seem to be unwilling to think and talk about the implications of increasing oil scarcity, and seem to be concerned only with the short-term implications on the price of oil in the form of gasoline (Newman et al. 2009). We are a civilization in denial that the very resource upon which our lives have been built is running out and lack the foresight to actively plan and implement a resilient future. Critics such as the International Energy Agency (IEA), a group created to advise twenty-seven member countries on energy policy, have always stated that enough oil reserves remain to enable us to proceed for fifty years with business as
usual. However, in 2006, the IEA recognized that conventional oil is peaking and may decline by as much as 5% but suggested that there is plenty of time for alternatives to develop (Newman et al. 2009). However, there is great debate that any combination of alternatives that could be developed in time would fall far short of filling the looming gap in oil supply.

**Energy Scenario Planning**

As discussed in the scenario planning history section, the Royal Dutch Shell oil company began utilizing scenario-based strategic thinking in the 1960’s. Though they are still employing scenario planning practices with the publication of *Shell Energy Scenarios to 2050* (2008), scenario planning is also being utilized in the analysis of alternative energy pathways. Evaluating energy scenarios that explore a range of possible future energy pathways is a useful method for exploring alternative and renewable energy sources (Chen, Yu, Hsu, Hsu, and Sung 2009, Ghanadan & Koomey 2005).

**Benefits of Scenario Planning**

**Understanding the Present**

Scenario planning helps provide a better understanding of how different factors affecting the future also affect each other. It can reveal linkages between apparently unrelated factors and, most importantly it can provide greater insight into the forces shaping the future, thus creating the ability to develop action plans (Holmgren 2009). Scenarios should be designed to challenge established views, to overcome business-as-usual complacency and to enable both established formulas and new ideas to be tested. Seeing reality from different perspectives mitigates the pitfalls of groupthink, fragmentation, procrastination, hindsight bias, shifting responsibility and bolstering commitment to failing strategies (Kourdi Ltd. 2016). Scenario planning helps break the constraints on traditional strategic practices, as it enables those involved to discuss the complexity and ambiguity of their perspectives in a wide context thus promoting action and ownership of the strategy process (Ringland 1998).
Seeing New Possibilities

Scenario planning encourages the opening of minds to new possibilities and the excitement of how they may be realized, therefore stimulating creativity and innovation. The process leads to a positive attitude that actively seeks the desired outcome (Ringland 1998, Schwartz 1991). Scenario planning helps people to understand their environment, consider the future, share knowledge and evaluate strategic options. Information is better evaluated and integrated in the scenario planning process, which enables those involved to recognize and react to emerging circumstances (Kourdi Ltd. 2016).

Developing a Shared Understanding

Scenario planning works because it looks beyond current assignments, facts and forecasts. It allows discussions to be more uninhibited and it creates the conditions for a genuinely effective shared sense of purpose to evolve (Ringland 1998, Schwartz 1991). Getting support for strategic decisions requires involving those that matter in the scenario planning process (Kourdi Ltd. 2016). Though it is clear that scenario planning can be used as a learning tool to explore the general areas of risk and opportunity, the real benefit is “not just to develop plausible descriptions of the alternative futures, but rather to help decision makers make better, more resilient strategic decisions” (Wilson 2000, pg. 24). “Even when impacts of climate change [and peak oil] are not yet discernible, scenarios of future impacts may already be of sufficient concern to justify building some adaptation responses into planning. In some cases, it could be more cost-effective to implement adaptation [and mitigation] measures early on, particularly for infrastructure with long economic life, or if current activities may irreversibly constrain future adaptation [and mitigation] to the impacts of climate change [and peak oil] (IPCC 2007, pg. 721).
Challenges of Scenario Planning

Time, Financial Resources and Expertise

“Scenario planning requires extensive time and financial resources and has been a coveted art with only a select few understanding the application methodologies” (Chermack et al. 2001, pg. 9). Because of limited expertise, scenario planning is unavailable to many organizations, and the intensity of involvement, attention to detail and the scope of the methodology have made scenario planning an activity in which only the most financially secure companies can participate (Wack 1985b).

May Create Confusion

Since the prominent planning culture in most organizations is still heavily based toward single-point forecasting, decision-makers faced with a multipoint forecasting, or scenario-based approach, often find it more confusing than just having one forecast.

“The major cultural barrier to scenario implementation stems from the way we define managerial competence. Good managers, we say, know where they are, where they’re going, and how they’ll get there. We equate managerial competence with ‘knowing,’ and assume that decisions depend on facts about the present and about the future. Of course, the reality is that we have no facts about the future” (Wilson 2000, pg. 24).

In dealing with this fact that all our knowledge is about the past, and all our decisions are about the future, Wilson (2000) suggests, “to establish a clear-cut ‘decision focus’ for every set of scenarios” (Wilson 2000, pg. 24). This might be an agreement on the strategic decision(s) that the scenarios should be designed to illuminate, rather than beginning with a review of the changing forces affecting the environment of the area under consideration. Although scenario planning improves the quality of decision making, it can be a challenging process further exposing the real complexity of implementation and execution of those subsequent decisions. “The causes of this implementation problem, in part practical and procedural, are still largely cultural and psychological” (Wilson 2000, pg. 24).
Resilience Planning

History

First gaining prominence in the work of Holling (1973), resilience has been a major theme in research on ecological and social-ecological systems and later became a larger body of research on global environmental change (Tierney 2014, Walker, Gunderson, Kinzig, Folke, Carpenter and Schultz 2006, Folke, Carpenter, Elmqvist, Gunderson, Holling and Walker 2002). The key idea within Holling’s (1973) original definition of resilience is a “measure of the persistence of systems and their ability to absorb change and disturbance” (Holling 1973, pg. 14). A more formulated and specific definition on social-ecological system resilience: “Resilience, for social-ecological systems, is related to (a) the magnitude of shock that the system can absorb and remain within a given state, (b) the degree to which the system is capable of self-organization, and (c) the degree to which the system can build capacity for learning and adaptation…More resilient social-ecological systems are able to absorb larger shocks without changing in fundamental ways. When massive transformation is inevitable, resilient systems contain the components needed for renewal and reorganization” (Folke et al. 2002, pg. 7).

Within social-ecological systems, change is the only constant. “Humans need to learn to adapt to change and resilience is a key to successful adaptation and sustainable living” (Saavedra & Budd 2009, pg. 250). Since local communities cannot control the occurrence and intensity of many significant disturbances such as hurricanes, storms, floods, and droughts that are already occurring at extreme intensities, they need to create the capacity to deal with the resultant change. “Building resilience involves understanding and planning for these changes and creating the capacity to live with those changes instead of being a victim of them” (Saavedra & Budd 2009, pg. 251). Walker et al (2006) define resilience as “the capacity of a system to experience shocks
while retaining essentially the same function, structure, feedbacks, and therefore, identity” (Walker et al. 2006, pg. 13).

The IPCC (2007) states that resilience is achieved through reducing vulnerability to climate change and peak oil in the course of mitigation measures, encouraging adaptation and ultimately enhancing the adaptive capacity of the system, or community (IPCC 2007). Effective mitigation requires participation globally, whereas most adaptation takes place at local and national levels.

The benefits of mitigation are global, whilst its costs and ancillary benefits arise locally. Both the costs and benefits of adaptation mostly accrue locally. Consequently, mitigation is primarily driven by international agreements and the ensuing national public policies, whereas most adaptation [and eventual level of resilience] is driven by private actions of affected [and forward planning] entities and public arrangements of impacted communities (IPCC 2007, pg. 72).

The capacity of a community to adapt and ultimately develop resiliency is dynamic and is influenced by economic and natural resources, social networks, entitlements, institutions and governance, human resources, and technology (IPCC 2007).

Boin, Comfort and Demchak (2010) define resilience as “the capacity of a social system (e.g., an organization, city or society) to proactively adapt to and recover from disturbances that are perceived within the system to fall outside the range of normal and expected disturbances” (Boin et al. 2010, pg. 9). Resiliency has a firm foundation in the fields of engineering, biology, and psychiatry. As engineers apply the concept to materials and technical systems, biologists study the resilience in organisms and life systems, and psychiatrists seek to understand the resilience of individuals and their interactions with social systems (Boin et al. 2010). “The concept of resilience conveys the capacity of material, person, or biotope to survive sudden shocks” (Boin et al. 2010, pg. 7). Thus, resilient systems have the capacity to recognize, adapt to, and absorb variations, changes, disturbances, disruptions, and surprises. “A true mark of resilience is thus the ability to negotiate flux without succumbing to it” (Boin et al. 2010, pg. 8).
Resilience is derived from the Latin word *resilio*, meaning ‘to jump back’ (de Bruijne, Boin and van Eeten 2010). In physics, resilience refers to ‘the ability of a material to return to its former shape after a deformation’ and is considered more or less synonymous with adaptability or flexibility (de Bruijne et al. 2010). Resilience applied to an individual, group or organizational level is considered to be “the capacity of social systems to ‘resist’ adversity and deal with uncertainty and change” (de Bruijne et al. 2010, pg. 14). Societal resilience is defined as “the capacity of a social system to proactively adapt to and recover from disturbances that are perceived within the system to fall outside the range of normal and expected disturbances” (Rhinard & Sundelius 2010, pg. 198), namely through the ‘capacity to cooperate’. Cooperation between sub-government entities can generate government efficiency, effectiveness, and mutually beneficial outcomes (Rhinard & Sundelius 2010). “When change is needed, or perceived to be needed, better cooperation is usually the clarion call” (Rhinard & Sundelius 2010, pg. 198).

Hopkins (2008) defines resilience in the context of communities and settlements in that “it refers to their ability to not collapse at first sight of oil or food shortages, and to their ability to respond with adaptability to disturbance” (Hopkins 2008, pg. 54). He goes on to include three important features central to resilience and a system’s (or community’s) ability to reorganize itself following shocks. They are:

*Diversity:* relates to the number of elements of a system (people, species, businesses, institutions, etc.), but is not only the number of elements that make up that diversity, but also the number if connections and interrelationships that they form. The diversity of functions in communities and a diversity of potential responses to challenges, leads to a greater flexibility through redundancy (Hopkins 2008).

*Modularity:* relates to the manner in which the components that make up the system are connected. More modular structures of the parts of systems can more effectively self-organize in the event of shock to that system (Hopkins 2008).
**Tightness of Feedbacks:** refers to the rate and severity at which the consequences of a change in one part of the system are felt and responded to in other parts (Hopkins 2008).

“Centralized governance and globalization can weaken feedbacks. As feedbacks lengthen, there is an increased chance of crossing a threshold without detecting it in a timely fashion. In a more localized system, the results of our actions are more obvious” (Hopkins 2008, pg. 56).

The most comprehensive definition of resilience for post-peak oil and climate change planning purposes includes that a resilient system (or community) has the capacity to absorb changes and yet maintain the ability to rapidly bounce back from some form of impact or shock to the system (or community), and not just to the same form, function, structure, or qualitative state that it was before, but to improve through the notion that the resilient system (or community) has the ability to also learn from experiences and adapt or modify themselves in response to the impacts and thereby become more resilient to future impacts or shocks (Masterson et al. 2014, Tierney 2014, Beatley 2009, Newman et al. 2009).

The notion of bouncing back to roughly the same form or state as before a disaster event [or undesired event like peak oil or climate change] may not be necessarily advantageous or desired. The analysis of disasters often finds that disasters themselves represent failures of social systems to properly adapt to the biophysical environment, inappropriate development, and land use patterns and that systemic weaknesses in the form of social vulnerabilities are often generated by the systems themselves. Returning or bouncing back to the pre-disaster state is not necessarily resilient or adaptive but rather lays the seeds for future disasters (Masterson et al. 2014, pg. 30).

For this research, the definition of resilience is the ability of a community and the biophysical systems upon which they depend, to:

- Resist or absorb the impacts (deaths, damage, losses, etc.) of post-peak oil and climate change;
- Rapidly recover from those impacts; and
- Reduce future vulnerabilities through the development of adaptive strategies in higher states of resiliency for both physical and social contexts by increasing economic, ecological and social sustainability (Masterson et al. 2014).
What is Resilience Planning?

Planning is one way of enhancing adaptive capacity and achieving resilience (Tierney 2014). “The goal of various planning activities, such as developing disaster plans and collaborative agreements, training personnel, stockpiling supplies and equipment, engaging in disaster drills and exercises and ‘what if?’ scenarios, and undertaking pre-disaster planning for post-disaster recovery, is to improve adaptive disaster resilience” (Tierney 2014).

Specific strategies and policies exist that can increase a community’s robustness, influence and increase the rapidity of recovery, and enhance future conditions (Masterson et al. 2014). Resilience planning includes mitigation and recovery planning, as mitigation is key for reducing disaster impacts. “When we learn from a disaster and adapt our social systems and their built environment to reduce future losses through mitigation practices during recovery, we are working to achieve resilience” (Masterson et al. 2014, pg. 63). Resilience planning is designed to assist individuals, households, businesses and communities to anticipate the challenges that changes will bring and adjust accordingly. Plans and planning activities are therefore a key source of post-peak oil and climate change resilience (Tierney 2014).

Strategies for resiliency planning to transition away from oil dependency must be based on partnerships between government, business, and civil society (Newman et al. 2009). Passing a resolution acknowledging peak oil and climate change (for example, the Mayor’s Climate Change Initiative and Kyoto Protocol) is a critical first step in moving towards resiliency, but the resolutions need to be followed by a plan for implementing change (Newman et al. 2009).

Newman et al. (2009) identifies a number of components that should be included in resilience planning as “a mixture of visionary grassroots initiatives demanding more options for sustainable living and transport, innovative business, and strong political leadership offering incentives or regulating for more livable, sustainable environments from the regional to the building level” (Newman et al. 2009, pg. 55). In order to achieve a resilient city, these seven key themes must be planned into the built environment:
1. Renewable Energy City: urban areas will be powered by renewable energy technologies from the region to the building level.
2. Carbon Neutral City: every home, neighborhood, and business will be carbon neutral.
3. Distributed City: cities will shift from large centralized power, water, and waste systems to small-scale and neighborhood-based systems.
4. Photosynthetic City: the potential to harness renewable energy and provide food and fiber locally will become part of urban green infrastructure.
5. Eco-Efficient City: cities and regions will move from linear to circular or closed-loop systems, where substantial amounts of their energy and material needs are provided from waste streams.
6. Place-Based City: cities and regions will understand renewable energy more generally as a way to build the local economy and nurture a unique and special sense of place.
7. Sustainable Transport City: cities, neighborhoods, and regions will be designed to use energy sparingly by offering walkable, transit-oriented options for all supplemented by electric vehicles (Newman et al. 2009, pg. 55-56).

Before a resilience plan can be effectively created and implemented, an analysis must be done of what it will take to change how we build and where and how people move around our settlement regions. Existing initiatives and policies should help provide some insight into how this can be developed, and “there are a growing number of tools available to local governments for creating and implementing a strategic plan, including a new guidebook created by the group Post Carbon Cities and resources offered by initiatives such as the Clinton Climate Leadership Group and ICLEI [Local Governments for Sustainability]” (Newman et al. 2009, pg. 114).

A resilience plan for post-peak oil and climate change cannot be achieved without full public participation through participatory processes (Newman et al. 2009, Wates 2000). “The value of these engagement processes cannot be underestimated as the community in the end has to support the long-term vision or it is meaningless” (Newman et al. 2009, pg. 115).

In addition to successful civic engagement practices, a community’s plan for resilience will not thrive without the political will of local elected officials.

Political courage, strong leadership, and knowledgeable officials are all required…What is needed is a new politics that values the future; understands the importance of stimulating, underwriting, and nurturing new transit systems and renewable energy technologies and markets; and views forging a new energy path as a legitimate function for all levels of government (especially the local level) (Newman et al. 2009, pg. 115).
Embracing a resiliency plan in response to peak oil and climate change requires elected officials to be genuinely concerned and motivated by impacts and future outcomes that will extend far beyond the typical electoral cycle (Newman et al. 2009).

**Process of Resilience Planning**

Building resilience and adaptive capacity requires the integration of four elements within a plan:

- Learning to live with change and uncertainty
- Nurturing diversity for reorganization and renewal
- Combining different types of knowledge for learning
- Creating opportunities for self-organization (Folke, Colding and Berkes 2003).

**Areas Utilizing Resilience Planning**

In the field of disaster, crisis and emergency management planning, the concept is known as disaster resilience. “Resilient social and constructed systems are described in many ways: as being able to ‘fail gracefully’ or as having ‘rebound capacity’” (Birkland 2010, pg. 108). Disaster and emergency management defines resiliency as “the capacity for collective decision making both during and immediately after the onset of a crisis. In this definition, the ability of a community to recover or ‘bounce back’ is the essence of resilience” (Birkland 2010, pg. 108). “It can be viewed as the ability to deflect, absorb, or abate the impact of a disaster or major incident by preparedness, prudence, and the ability to react in a flexible and efficient manner to an event as it occurs” (Alexander 2010 pg. 143). Resilience highlights the fact that the key to crisis or emergency management is to ensure that all agencies work effectively together during a crisis.

Resilience planning is utilized within a number of different disciplines, including natural hazard management, ecology, psychology, sociology, geography, psychiatry, and public health (Masterson et al. 2014). The concept of resilience has gained the most popularity in recent years in tackling the problem of increased vulnerability to natural disasters and disaster management (Masterson et al. 2014).
Organizations planning for resilience have defined their approach as being capable to “detect, contain, and bounce back from those inevitable errors that are part of an indeterminate world” (van Eeten, Boin and de Bruijne 2010, pg. 158). This means to develop redundancy, the capacity for resourcefulness, effective communication and the capacity for self-organization in the face of extreme demands (van Eeten et al. 2010). Organizational resilience is defined “both in terms of outcome (bouncing back, emerging stronger) and process (grasping crisis dynamics, learning, creating a culture of awareness)” (van Eeten et al. 2010, pg. 179).

Resilience planning is essential to integrate into all levels of cities strategic and general planning processes. “With the slow onset of [peak oil and] climate change impacts, the incorporation of mitigation [and adaptation] strategies in comprehensive plans becomes all the more meaningful for communities” (Masterson et al. 2014).

**Transition Town Planning**

**History**

Transition Town planning is based upon the Transition model, “which is a positive, solutions-focused way of gathering those around you together to start exploring community-scale responses to peak oil and climate change” (Hopkins 2008, pg. 133) and is a movement dedicated to achieving a comprehensive reduction in oil dependency through community-scale initiatives (Bailey, Hopkins & Wilson 2010). The first Transition Initiative, Transition Town Totnes, was launched in September 2006 in the United Kingdom (Hopkins 2008). Since then, the “Transition movement has rapidly become one of the fastest-growing community-scale initiatives in the world” (Hopkins 2008, pg. 133). At the time of the writing of this thesis, Transition Network (2013) lists 479 Transition Initiatives that are active around the world (Transition Network 2013).

Transition Towns has largely become known as Transition Initiatives due to the fact that many different scales of settlements are adopting the Transition model, including cities, villages, boroughs, valleys, peninsulas, hamlets, islands and postal codes (Chamberlin 2009, Hopkins
2008). “Transition Initiatives are an emerging and evolving approach to community-level sustainability, which is starting to appear in communities” (Hopkins 2008, pg. 134) all around the world, and began with the Kinsale 2021: An Energy Descent Action Plan (Kinsale Further Education College 2005).

**What is Transition Town Planning?**

The Transition Town concept looks directly at the twin challenges of peak oil and climate change. Central to the Transition Town concept is resilience. Transition Town planning “argues that in our current (and long overdue) efforts to drastically cut carbon emissions, we must also give equal importance to the building, or more accurately to the rebuilding, of resilience” (Hopkins 2008, pg. 12).

The end of the Age of Cheap Oil is rapidly coming upon us, and life everywhere will radically change whether we want it to or not. Transition Town planning “represents a new way of looking at what our future might hold, arguing that by taking a proactive response rather than a reactive one, we can still shape and form that future, within the rapidly changing energy context, in such a way that it ends up preferable to the present” (Hopkins 2008, pg. 15). Transition Town planning is about designing abundant pathways and planning for an energy descent (post-peak oil), and to put resilience-building back at the heart of all city plans (Bailey et al. 2010, Chamberlin 2009, Hopkins 2008).

It is important that both peak oil and climate change be woven together in our planning and decision making, and to see them as being intrinsically linked. The Transition Town model will function best in the context of a combination of top-down and bottom-up responses, none of which can address the challenges in isolation (Bailey et al. 2010, Chamberlin 2009, Hopkins 2008).

Transition Initiatives are based on four key assumptions:

- That life with dramatically lower energy consumption is inevitable, and that it’s better to plan for it than be taken by surprise.
• That our settlements and communities presently lack the resilience to enable them to weather the severe energy shocks that will accompany peak oil.
• That we have to act collectively, and we have to act now.
• That by unleashing the collective genius of those around us to creatively and proactively design our energy descent, we can build ways of living that are more connected, more enriching and that recognize the biological limits of our planet (Hopkins 2008, pg. 134).

Rather than being just an intellectual exercise, Transition Initiatives explore the practicalities of the conscious relocalization of a settlement (Bailey et al. 2010, Chamberlin 2009, Hopkins 2008). “The Transition process offers a positive, solutions-focused approach that draws together the various elements of a community to address this common challenge [of peak oil and climate change] and sees much of the solution as coming from within, through a process of unlocking what is already there, rather than from experts and consultants coming in from the outside” (Hopkins 2008, pg. 136).

Hopkins (2008), the originator of the Transition model, identifies six principles that define what is distinctive about the Transition concept:

1. **Visioning:** we can only move towards something if we can imagine what it will look like when we get there. Creating a clear and enticing vision of the future is a key principle of the Transition process.
2. **Inclusion:** the scale of challenges that peak oil and climate change represent must be addressed with a large degree of dialog and inclusion that has rarely been achieved before.
3. **Awareness-raising:** is essential to start with the assumption that people don’t know anything about the issues surrounding peak oil and climate change, and set out the case as clearly, accessibly and entertainingly as possible, giving people the key arguments in order to let them formulate their own response.
4. **Resilience:** the rebuilding of resilience is, alongside the need to move rapidly to a zero carbon society, central to the Transition concept. To do one without the other will fail to address either challenge.
5. **Psychological insights:** it is understood that among the key barriers to engagement are the sense of powerlessness, isolation and overwhelm that environmental issues [including peak oil and climate change] can often generate. These do not leave people in a place from which they can generate action, either as an individual or as a community. The Transition model utilizes these insights firstly through the creation of a positive vision, secondly by creating safe places where people can talk, digest and feel how these issues affect them, and thirdly by affirming the steps and actions that people have taken, and by designing into the process as many opportunities to celebrate successes as possible. This enables people to feel part of a collective response, that they are part of something larger than themselves.
6. **Credible and appropriate solutions**: it is important to enable people to explore solutions of a credible scale. The Transition model explores the common ground between the two scales of individuals doing things in their own homes, and the government acting on a national scale. Transition Initiatives looks at what can be achieved at the community level (Hopkins 2008, pg. 141-142).

All Transition Initiatives emerge in various ways and under different circumstances.

Hopkins (2008) has laid out Twelve Steps of Transition as a guide for newly forming Transition Initiatives to utilize as they see fit for their unique situations.

1. **Set up a Steering Group and design its demise from the outset**: start by gathering like-minded individuals to drive forward the first stage of the process. This includes designing the Steering Group's own demise by setting a defined lifespan for the initial group's functioning. The initial steering group should aim to get through steps 2 to 5, and agree that once a minimum of four sub-groups are formed, your group disbands and the Steering Group becomes made up of one person from each of the groups. This is important in putting the success of the initiative above the individuals involved.

2. **Raise awareness**: you cannot assume that people in your community are familiar with peak oil and climate change or even with basic environmental concepts and principles.

3. **Lay the foundations**: it is essential to network with existing groups and initiatives that already exist within the community, and make it clear that this is a process of supporting and collaborating with them, rather than duplicating their endeavors or dismissing their years of hard work as somehow irrelevant.

4. **Organize a Great Unleashing**: the aim of this event is to generate a momentum, which will propel the Initiative forward for the next period of its work. An Unleashing is a one-off opportunity to bring everyone together and to launch the Transition Initiative.

5. **Form groups**: tap into the collective genius of the community by forming a number of smaller groups to focus on specific aspects of the Transition process.

6. **Use Open Space**: Open Space Technology is a simple way to run productive meetings, for five to 2,000+ people, and a powerful way to lead any kind of organization, in everyday practice and ongoing change.

7. **Develop visible practical manifestations of the project**: talk of visions need to translate into practical manifestations in the community to affect both people’s perceptions of the initiative and their willingness to engage.

8. **Facilitate the Great Reskilling**: offer widely available training in a range of skills that communities may have lost that will be valuable in a post-peak oil society. Reskilling events bring people together, build networks, create a sense of ‘can do’, create a link between old and young as skills are passed on, and can be practical events, which actually put something in place.

9. **Build a bridge to local government**: any Transition Initiative will not progress very far unless it has cultivated a positive and productive relationship with the local authority. Seek to engage and understand all current plans that have been generated to see what has already been done.

10. **Honor the elders**: it is hard to relate to the idea of life with less oil, thus a great deal can be understood from those who directly remember the transition to the age of Cheap Oil, especially the period between 1930 and 1960.
11. *Let it go where it wants to go:* the Transition process should follow the direction of the energy of those who are involved.

12. *Create an Energy Descent Action Plan:* whatever it is called (Energy Descent Plan; Community Resilience Action Plan; Energy Transition Pathway), a plan for action in designing pathways away from oil-dependency is crucial for retrofitting the built environment. It should set a vision of a powered-down, resilient, relocalized future, and then backcasts in a series of practical steps, creating a map for getting from here to there. Every community’s action plan will be different both in content and in style, but will explore a wide range of areas including energy descent, food production, tourism, economics, education and more. Work to integrate an Energy Descent Action Plan into the local governments general and strategic plans (Hopkins 2008, pp. 148-175).

The Transition Town model offers a practical, community-scale relocalization response that attempts to incorporate both a top-down and a bottom-up approach to planning by redesigning communities for resilience in the face of peak oil and climate change. “It is an idea whose time has come. It is important to remind ourselves that this is not a process which has achieved nothing until it has completely powered-down its community; rather, what matters is the journey, the process, the coming together and doing it” (Hopkins 2008, pg. 213).

**Coastal Community Resilience Planning**

Resilience in relation to planning for coastal communities and regions integrates the themes of flexibility, adaptability, and durability (Masterson et al. 2014, Blakely & Carbonell 2012, Beatley 2009, Newman et al. 2009). “Implicit in the notion of resilience is an emphasis on taking actions and steps to build the adaptive capacity, to be ready ahead of a crisis or disaster. Resilience is anticipatory, conscious, and intentional in its outlook; while much cannot be known about future events, much can be anticipated, and planning ahead becomes a key aspect of resilience” (Beatley 2009, pg. 6).

How we plan our communities, the patterns of development that occur, and the location of physically vulnerable structures and socially vulnerable populations significantly affect the ability of coastal communities to withstand and even prosper in the face of peak oil and climate change impacts (Masterson et al. 2014, Newman et al. 2009). “Guiding land development, strengthening building codes, and protecting natural resources are all techniques that are best
accomplished with thoughtful and comprehensive city and regional planning. Hazard mitigation and creating resilient communities must be at the forefront of [post-peak oil and climate change] planning and, when done effectively, will save lives and property, making the work of emergency managers more effective” (Masterson et al. 2014, pg. 8).

Coastal communities and populations face an extensive set of unique threats and hazards, including hurricanes, sea level rise, flooding, storm surges, earthquakes, and tsunamis, among others (Blakely & Carbonell 2012, Beatley 2009). A limited understanding of the long and short-term risks and dangers of living in coastal environments within government and local decision and policy makers, further contributes to these vulnerable patterns of development, as does a failure to adequately price and value the very natural ecosystems and ecosystem services that can support a resilient settlement (Newman et al. 2009). High population and development growth rates in coastal communities have led directly to degradation of the local and regional ecosystems that provide resilience to those communities. While coastal counties make up only 17 percent of the nation’s land area, more than 50 percent of its population resides within the various coastal counties; thus some of the highest urban densities are found in coastal areas (Beatley 2009). Population growth is a major driver in coastal areas, and a major factor in determining the resilience of coastal communities and regions. “Much of this coastal development occurs in the form of sprawl, defined as low-density development at the edge of cities and towns, poorly planned, land-consumptive, auto-dependent, and designed without respect for its surroundings. This pattern of development is highly land-consumptive and destructive of natural features, and much of it is in areas subject to coastal hazards” (Beatley 2009, pg. 15). This destructive type of development results in significant environmental damage and landscape alteration; loss of farmland and rural land; replacement of open and natural habitat with roads, parking lots, and impervious surfaces; and loss of coastal wetlands and other natural areas that provide critical habitat while also buffering and protecting coastal communities from the impacts of flooding and storm surges (Masterson et al. 2014, Blakely & Carbonell 2012, Newman et al. 2009).
Clearly a big physical vulnerability to coastal communities in the context of climate change is sea level rise. Sea level rise will inundate large portions of the United States, areas inhabited by 50 million Americans (Beatley 2009). This rise in sea level is not a theoretical possibility but rather has been occurring throughout the last century, with acceleration over the last decade. Sea level rise is primarily the result of thermal expansion and mass inputs of freshwater as a result of melting ice sheets (Newman et al. 2009, IPCC 2007).

Many coastal communities fall within areas of significant seismic activity. “Many coastal population centers, including Boston in the Northeast, Seattle and Portland in the Northwest, and much of California, face serious seismic hazards” (Beatley 2009, pg. 21). Being vulnerable to seismic activity also means being vulnerable to the threat of tsunamis, potentially causing tremendous damage and loss of life in low-lying coastal areas, including harbors and seaports. Tsunami mitigation and preparedness are presently inadequate in California coastal communities (Beatley 2009).

An increase in higher-than-average summer temperatures in coastal communities due to climate change will cause communities to adapt to heat waves and drought events, leading to an increase in wildfires and significant flooding events (Masterson et al. 2014, IPCC 2007).

Resource depletion overall will be challenging for coastal communities facing peak oil and climate change. “Many, perhaps most, coastal communities around the world face serious and long-term shortages of potable freshwater. A combination of profligate use and waste, water shortages are exacerbated by climate and drought, though their underlying causes may be more complex (a combination of high usage, population growth, and unsustainable sourcing)” (Beatley 2009, pg. 22). Coastal resource decline in turn affects the economic resilience of a coastal community or region.

All communities (including coastal communities) are vulnerable to the impacts of peak oil for several reasons, including:

1. Car-dependent communities, lifestyles, and land use patterns.
2. Poor public transit systems.
3. Land use and growth patterns that provide few feasible alternatives to the use of the car (walking and bicycling are difficult) (Beatley 2009, pg. 25-26).

Key planning components for coastal community resilience planning includes: resilience of land use and built environment; resilience of ecosystems and natural coastal environments; social resilience; and economic resilience. Changes in coastal land use patterns and urban form can serve to reduce direct exposure to natural hazards, but they may also help to promote social interaction and to build a sense of community, in turn enhancing social resilience. Investments in resilience in one realm help to advance resilience in the other dimensions as well (Masterson et al. 2014, Newman et al. 2009).

Effective design and planning for resilient coastal communities incorporates a set of broad principles that are not mutually exclusive, but are reinforcing and complementary. Beatley (2009) lists the following principles of coastal resilience:

Take a Long-Term, Multiscaled Approach
Create a Compelling Vision of the Future
Guide Growth and Development Away from High-Risk Locations
Ensure That Critical Facilities Are Located Out of or Away from High-Risk Locations
Plan Ahead for a Resilient Recovery and Growth
Preserve and Restore Ecosystems and Ecological Infrastructure
Promote a Diverse Local Economy
Work Toward a Landscape of Resilience
Design and Build Decentralized Resilient Infrastructures
Plan for Long-Term Community Sustainability
Think Holistically
Design for Passive Survivability and Sustainability
Promote Social Resilience by Nurturing Critical Social Networks and Institutions
Encourage an Active, Healthy Community and Citizenry
Engage the Community by Nurturing Forward-Looking Leadership
(Beatley 2009, pg. 59-71).

Coastal regions and communities are diverse, and have their own special opportunities to enhance resilience. Therefore, the options and tools available are in abundance. As mentioned previously, the design and planning of a community’s land use patterns, infrastructural investments, and built environments can be some of the most effective in advancing resilience (Masterson et al. 2014, Beatley 2009, Newman et al. 2009). The creation of more resilient and
sustainable land use patterns needs to be one of the highest priorities of coastal communities, and there is a growing consensus about what elements these resilient land use patterns should include:

1. Population and development should be located outside of and away from high-risk coastal hazard zones.
2. Coastal growth patterns should build onto the historic patterns of towns and villages that typically exist in the coastal region being examined.
3. Coastal land use patterns should be compact and walkable and simultaneously conserve land, reduce car dependence and energy consumption, and allow the possibility of healthier lifestyles and living patterns.
4. Coastal land use policies and regulations should be enacted to protect, preserve, and restore ecological systems and natural features such as wetlands, forests, and riparian systems.
5. Land use patterns and community design should incorporate direct access to nature and natural systems.
6. Community land use patterns should promote social and community interaction by creating pedestrian-friendly streets, sidewalks, and gathering places and a vibrant public realm that includes ‘third places’ such as parks and plazas, farmers’ markets, and the like.
7. Critical facilities such as wastewater treatment plants, hospitals and police and fire stations should be sited outside of high-risk locations, and in places where in the event of a major community disruption they will remain functional.
8. Essential community lifelines and infrastructure should be designed and integrated into a community’s land use to reduce exposure to vulnerability and to ensure operability during and after community disruptions.
9. Land use patterns should emphasize the benefits of green infrastructure over conventional infrastructure that will be more likely to fail in disaster events (Beatley 2009, pp. 73-74).

Coastal designers and planners have an extensive selection of land use planning tools available to them to create the land use patterns listed previously, including local plans, zoning, coastal setbacks and clustering, and land and property acquisition (Masterson et al. 2014, Blakely & Carbonell 2012, Calthorpe 2011, Newman et al. 2009). A California coastal community’s General Plan (a community’s land use plan to serve as a template for how a community evolves over time) is “a key tool for helping a coastal community to become more resilient” (Beatley 2009, pg. 76).

Perhaps the most important component in coastal community resilience planning is integrating feedback loops, or metrics for monitoring and measuring the level of a community’s coastal resilience. Is the community better equipped to respond or adapt to and recover from an impacting event? How do we know this? Is the community becoming more vulnerable and less
resilient over time (Beatley 2009)? It is just as important to develop good measures of community resilience progress or achievements, as it is to develop specific programs, policies, and initiatives to advance a community’s level of resilience. One approach is to clearly identify a series of resilience milestones, or targeted actions or accomplishments that the community declares its intentions to achieve or meet by a certain date. Resilience milestones might include: “preparing and adopting a hazard mitigation plan; hiring a resilience officer or staff; reaching a certain target percentage (say, 25 percent) of local businesses that have prepared business continuity and hazard recovery plans; creating an effective local warning system or other key warning, preparedness, and recovery steps that need to be taken by a specific community; Developing a plan and funding source for land acquisition, reaching a targeted acreage of hazardous land in the community to be acquired and set aside from development” (Beatley 2009, pg. 95).

There is no silver bullet, no single action, policy or decision that coastal communities can take that will give them instant resilience towards the impacts of peak oil and climate change. “Ideally, what is needed is a package of reinforcing plans and implementation tools, a mix perhaps of the conventional tried-and-true, such as community land use plans [General Plans], and the new and innovative [Transition Initiatives], such as more resilient small-scale distributed [and decentralized] systems for power generation and low-impact development techniques” (Beatley 2009, pg. 96). Implementing coastal community resilience planning principles will have multiple benefits across sectors in the form of higher quality of life and personal and family enrichment. At the end of the day, resilience is not about self-sacrifice but about common sense resource management, smart settlement design and doing what is necessary for a safe, sustainable, and meaningful life for all coastal residents into perpetuity.

**Action Planning**

Upon acceptance of a range of suitable scenarios, a plan for taking action to mitigate and increase the adaptive capacity of a community to deal with the impacts is of paramount priority
Action plans allow groups and communities to move beyond the realm of ideas and forms of progress towards meeting the goals set forth in general vision plans (Prashar et al. 2013).

**What is Action Planning?**

The concept of action planning has roots in traditional urban planning, which is considered to be less proficient than action planning at delivering its benefit on the ground (Prashar et al. 2013, Hamdi & Goethert 1997). While urban planning considers risk management as a separate discipline, it can effectively address urban risks by adopting practical and community-led risk mitigation and adaptation measures, thus significantly reducing community vulnerability (Prashar et al. 2013). Action planning processes consist of various stages and can be organic in nature since many stages overlap as the action plan progresses due to revised objectives and community priorities based on stakeholder involvement. Stakeholders involved in action planning may include community members, government authorities, Non-Government Organizations (NGOs) and other civil society organizations (Prashar et al. 2013, Hamdi & Goethert 1997).

A typical plan is usually developed and approved, and the implementation is left as someone else’s responsibility (Rosser 2007). However, action planning provides systemic attention to the issues and can “potentially establish an ongoing framework for action in which needs are analyzed, options are developed, the public is involved, and progress is evaluated” (Wheeler 2008, pg. 482-483).

**Process of Action Planning**

In order to successfully achieve goals, it is paramount to determine the steps to get there, a sense of the pitfalls to be avoided along the way, and the means to assess success when the goals are achieved (Malcolm 2015). Each step or change to be sought should include the following information: *What* actions or changes will occur; *who* will carry out these actions or
changes; by when they will take place, and for how long; what resources (i.e., money, staff, etc.) are needed to carry out these actions or changes; and communication of who should know what information (Shapiro 2011). Malcolm (2015) proposes that the process consists of six steps:

- Define your Mission
- Gather data that bears on the problem and describe the Current State.
- Define Critical Success Factors, which are those things that must go right if you are to succeed.
- Establish Goals.
- Set Objectives, Target Dates, and Measures.
- Create an Action Plan drawn from the results of the previous five steps (Malcolm 2015).

These steps all deal in planning activities step-by-step with an end product being a practical plan to enable groups to resource and carry forward the steps needed to achieve their objectives and contribute to a long-term goal or vision (Shapiro 2011).

Before embarking on the action planning process, a strategic or vision plan must be in place so that the action plan being produced does not take place in a vacuum, without a framework. “It is not enough to do something because it seems like a good idea. Your ‘doing’ must be related to a clear strategy aimed at helping you achieve long-term goals and objectives” (Shapiro 2011, pg. 7). The strategic framework that Shapiro (2011) identifies as being required to be in place before beginning an action planning process includes:

1. A clear vision of the kind of society you are working towards, and a clear understanding of the problems that are standing in the way of such a society being achieved.
2. A set of values that express what you believe in and are the basis for what you are trying to achieve. These provide guidelines for how you work.
3. A clear mission statement that states what your project or organization does, how it does it, for whose benefit and, where appropriate, and in partnership with whom.
4. An overall goal that rephrases the specific problems you are attempting to address as being a positive situation that you are working to achieve.
5. An immediate objective or project purpose that expresses what you, as an organization or project, intended to achieve in the short-to medium-term, as your contribution to the overall goal.
6. Key result areas, which give shape to your strategy for achieving your immediate objectives (Shapiro 2011, pg. 7).
Areas Utilizing Action Planning

Action planning can be used by teams who are planning initiatives in a business or public sector environment, or by individuals making decisions about careers or other life choices (Malcolm 2015). It is the process of operationalizing strategic objectives; thus it is also called operational planning. When presented as the basis for a funding proposal, or for a loan application, or to get others to buy into a process or project in some way, they are often referred to as Business Plans (Shapiro 2011).

Any project, whether individual or group oriented that is founded in a particular vision or goal, will produce an action plan in order to successfully achieve the identified vision. Therefore, vision planning is utilized within a very broad range of applications and organizations, for example: individual or personal development; child safety; curriculum development and teaching; hospital incident planning; food system planning; hazard mitigation planning; and climate change planning (Malcolm 2015).
Benefits of Action Planning

With the strategic elements that Shapiro (2011) identified in place, the action planning process is set up to successfully operationalize any strategy or vision. An action plan provides a framework for developing an individual work plan for specific actions (Shapiro 2011). Without an action plan, there is no roadmap to layout where you are going or why you are going there. Without an action plan, a vision plan is likely to remain a grand dream and not gain any momentum.

Challenges of Action Planning

Problems arise when action planning is not reflected within a strategic and visioning framework and the organization or project keeps moving forward without linking its actions back to the vision plan. Without an action plan, implementation is very difficult. Work tends to be confused and uncoordinated. It is difficult to know who could have done what by when.
Sometimes things don’t get done and no-one notices until it is too late (Shapiro 2011). Major problems in implementing action plans include:

- Planning to do too much in too short a time.
- Not planning your activities in enough detail.
- Not working out time-lines to make sure that your sequencing and scheduling makes sense.
- Not making it absolutely clear who has responsibility and authority for making sure that all the steps get done.
- Not thinking through the resourcing implications rigorously, including: people, time, space, equipment and money (Shapiro 2011).

Community Action Plans (CAPS)

Community Action Planning (CAP) is a “participatory approach that aims at community development through problem solving” (Prashar et al. 2013, pp. 436). The main focus of a CAP is development of community-led action plans largely focused on risk reduction while focusing on specific themes including physical improvement, strengthening of community structures, and identification of community led environmental improvement initiatives (Prashar et al. 2013). The CAP process is broken into three stages of “problem and opportunity identification; prioritizing solutions and implementing and monitoring actions” (Prashar et al. 2013, pg. 437).

There are several tools and methods utilized in the first stage of CAP, which is problem and opportunity identification. Various Participatory Rural Appraisal (PRA) methods can be used, including community mapping, time-line development, problem mapping, and development of problem matrix (Prashar et al. 2013). Additionally, Hamdi and Goethert (1997) describe several tools and methods including direct observation, semi-structured interviews, resource survey, diagramming, mapping and modeling, games role play, and group work intermixing (Hamdi & Goethert 1997). These tools can help a community in identifying problems and solutions from which action plans can be developed through access to the local expertise and knowledge.
Once the problems and solutions are identified, the next stage is to prioritize those solutions. This can be achieved through a needs/benefits analysis, which involves creating strategies to deal with the problems and potential trade-offs (Prashar et al. 2013). Through this process, “typically a selection of solutions or options that can be handled by the community itself or with the support of intermediary organizations emerges” (Prashar et al. 2013, pp. 437). These solutions seek to increase community adaptive capacity and are typically in the form of community prioritized actions that are mainly community based. Tools and methods that can be employed to develop these solutions are adapted to the local setting and environment including questionnaire surveys, brain-storming, diagramming, time lines, daily routines and seasonal calendars (Prashar et al. 2013, Hamdi & Goethert 1997). The output of this stage is community-prioritized actions: essential, feasible, and capable of being implemented by the community in the short-term with some support by intermediary organizations.

The third and final stage of a CAP is implementation and monitoring. Once identified solutions have been prioritized, and actions to achieve those solutions are recognized, a method and platform for how to implement those actions is required. This might include the formation of specific task force teams to develop a plan of action where timetables or timelines, costs, commitments, and responsibility are developed (Prashar et al. 2013, Hamdi & Geothert 1997). The monitoring of these implemented actions is essential for measuring their impact and provides information for an evaluation of a CAP, including how successful the targeted objectives were and what kinds of impacts the program will have at the city level (Prashar et al. 2013). Indicators for monitoring at this stage will be both qualitative and quantitative, including technical indicators, economic indicators, operating or organizational indicators, social indicators, and environmental indicators (Hamdi & Geothert 1997). The objective is to channel lessons learned from the local level to the city planning level since “monitoring and learning from CAP[s] can also be useful in modifying and improving the strategic plans at [the] city level” (Prashar et al.
A community action plan is useful in influencing policy and ensuring civic or local level participation in the governance of the community.

Community action planning for cities experiencing vulnerability risks and impacts of climate change, provides a community participatory approach for addressing localized issues. The strength of a CAP lies within its reliance upon local knowledge of the community that is typically communicated orally and seldom formally documented (Prashar et al. 2013), as well as participation from many stakeholders. When this level of localized information is unavailable, government officials find it difficult to assess the risk and opportunities of a specific community in order to successfully prepare a comprehensive CAP (Prashar et al. 2013). An additional side benefit of a CAP process is that it undoubtedly helps in building strong networks within the local community (Hamdi & Geothert 1997). Given the diverse demographics of many urban communities, it can be challenging to develop a CAP that provides outcomes meeting the different needs and priorities for individuals and families within a community. Further research on how to engage and include participation from a representative sample of a community is needed (Prashar et al. 2013).

**Summary of Scenario, Resiliency, and Action Planning**

Scenario planning has been described as a group process, which encourages knowledge exchange and development of mutual deeper understanding of central issues important to the future of an organization. This organization can be whoever wants to widen their perceptions of possible future events and be prepared for them through more informed strategic decisions. Nearly all scenario planning literature discusses the scenario process utilized within a business environment. Once a scenario (or scenarios) are agreed upon as being the most likely results of a possible future, a plan for how to achieve a resilient system in the face of that most likely future scenario is developed. A framework for resiliency is established as the mission given the likeliest
future scenario. This works to set the goals and objectives needed for a successful action plan to be developed and implemented.

Within the City of Portland’s Climate Action Planning documents, the risks of potential climate trends and projections are addressed as vulnerable scenarios within specific sectors such as human systems, natural systems, infrastructure and built environment, food systems, population growth, energy and economy (City of Portland and Multnomah County 2014). Earlier it was noted that one-dimensional or single-outcome forecasting is not as robust a planning approach as being prepared for whatever happens, which the creation of multiple scenarios can provide.

However, planning scenarios are not sufficient as stand alone solutions. In addition, a community action plan that is developed with resiliency at its core and that permeates throughout all aspects of the plan is the next necessary step. And in the end, resiliency planning deeply ingrained within an action plan is what will enable a vision plan to be successfully realized while addressing all initially agreed upon scenarios. This ensures that an action plan is developed with a comprehensive resiliency approach that is compatible with the initial vision plan and is made implementable with clear guidelines for achieving its goals.

**Planning Model**

Based on the literature on scenario planning, various resiliency planning approaches and community action planning, it seems clear that a model of planning can be portrayed as follows (Figure 5, next page):
Planning Model for Resilience: Post-Peak Oil & Climate Change

- VISION PLAN (Ventura Vision Plan - Studio 600)
- CREATION
- (CAP) COMMUNITY ACTION PLAN
- ADOPTION
- OFFICIAL CAP & GENERAL PLAN INTEGRATION
- IMPLEMENTATION
- CREATION OF CHANGE (Physical & Social)
- Policies, Laws, Regulations, Rewards, Incentives
- MONITORING + ASSESSMENT (Measurable Metrics)

Feedback Loop
Based upon the model above, gaps in the planning process have been identified as the creation of an action plan once the visioning has been completed; successfully adopting (into the General Plan or other defining municipal development document) a community action plan once it has been formed with resilient planning components and measures; and implementing action steps outlined in the plan that meet the goals set for the in the vision plan while producing on-the-ground results to increase the community’s capacity for resilience against the affects of post-peak oil and climate change.

Scenario, resiliency and action planning do not create concrete measures or the basis for implementation of the plans. This thesis examines the factors and barriers to actual implementation, therefore an examination of the literature which addresses models of implementation is necessary. These models may be divided into models dealing with individuals, communities or both. Successful implementation of any action plan that necessitates behavioral change requires the active participation of the community that is potentially impacted. Individuals within a community being asked to change their behavior and lifestyle are imperative to meeting the goals of any plan looking to prepare a community for the impacts of post-peak oil and climate change. Understanding the psychology behind behavior change is crucial to the development of a successful action plan, and in particular the gaps identified in the planning model.

**Individual Behavioral Change**

*Ajzen and Fishbein’s Theory of Planned Behavior or Reasoned Action*

The theory of reasoned action developed by Fishbein and Ajzen states that behavior is predicted by one’s intention to perform the behavior. “Intentions are assumed to capture the motivational factors that influence a behavior; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior. As a general rule, the stronger the intention to engage in a behavior, the more likely should be its
performance” (Ajzen 1991, pg. 181). Behavioral intention is a function of attitude toward performance of an impending behavior and subjective norms. Attitude is a function of beliefs about the consequences of behavior weighted by an evaluation of the importance of that attribute. And subjective norms are a function of expectation by significant others weighted by motivation to conform (Ajzen 1991, Mullen et al. 1987, Ajzen & Fishbein 1980).

Changes in behavior are seen first in individual beliefs, attitudes and norms. A change in behavioral intention is necessary but not an immediate cause of actual behavior. As with the health belief model, demographics, environmental, personality and other social psychology variables are expected to influence intention only through the other components of the model. Fishbein and Ajzen’s model does not take into account emotional elements such as perceived susceptibility to threats but is highly specific and provides a rigorous method for generating relevant beliefs (Ajzen 1991, Mullen et al. 1987, Ajzen & Fishbein 1980).

Normative belief is an important factor affecting people’s intentions to reduce their water use (Lam 1999). An example of current subjective norms and perceived social pressure to perform in creating individual change has been in the field of water efficiency in the landscape. Due to increased environmental awareness and on-going drought conditions in Southern California, the behavior of appropriate residential landscape management has changed from lush, green lawns to the new perceived norm of native and climate appropriate plants. While this is a function of other external factors such as increased water rates, “drought shaming” has created a new subjective norm by shifting the attitude in the direction of how landscapes should look and perform (California Urban Water Conservation Council 2014).

Attitudes toward the behavior, subjective norms with respect to the behavior, and perceived control over the behavior are usually found to predict behavioral intentions with a high degree of accuracy (Ajzen 1991).
**Bandura’s Social Learning Theory**

Bandura’s social learning theory states that behavior is learned from a cognitive process of observational learning in a social context. Behavioral changes are achieved through more of a social conversion than a self-discovery process (Bandura 1971). Bandura believed that humans think about the relationship between their behavior and its consequences, and are therefore actively processing information relative to their environment (Bandura 1999).

Social learning theory views behavior change as neither driven by inner forces nor by environmental influences, but rather by a continuous reciprocal interaction between behavior and its controlling conditions (Bandura 1977, Bandura 1971). Bandura outlines three areas of governing processes that cause human behavioral change.

1. Learning by Direct Experience: traditional theories of learning show behavioral change “as the product of directly experienced response consequences” (Bandura 1971, pg. 2). This results from direct experiences through observation of other people’s behavior and its consequences for them. New patterns of behavior can be acquired through this form of direct experience or by observing the behavior and its consequences to others, largely governed by the rewarding and punishment that follow any given behavior (Bandura 1971).

2. Cognitive Capacity, or having the ability to foresee the probable consequences of different actions and alter behavior accordingly, shows the capacity for higher mental processes to permit both insightful and foresightful behavioral change (Bandura 1977, Bandura 1971). “Actions are not always predictable…because cognitive factors partly determine what one observes, feels, and does at any given moment” (Bandura 1971, pg. 35). Consequences of specific actions have little or no effect on behavior when the relationship between one’s actions and outcomes is not recognized. However, behavior is dictated to a large extent by anticipated consequences of prospective actions (Bandura 1977, Bandura 1971). “Cognitive representation of conditions of reinforcement typically results in abrupt improvements in performance, indicative of insightful functioning” (Bandura 1971, pg. 36).
3. Self-Regulatory Processes: through self-regulative influences of consequences to specific actions, behavior can be controlled to some degree (Bandura 1971). Bandura (1971) lists three regulatory processes that human behavior, as response patterns, relies on: *stimulus*, *cognitive*, and *reinforcement control* (Bandura 1971):

**Stimulus Control:** the anticipation of probable consequences of different events and courses of action is necessary to regulate and express a particular behavior in a given context. Environmental stimuli provide information about probable consequences, “such as traffic signals, verbal communications, pictorial messages, distinctive places, persons, or things, or the actions of others” (Bandura 1971, pg. 12). Stimulus control over emotions and actions is established in both direct and vicarious experiences through association, but they differ in what gets associated. These stimuli are what motivate a response-directed behavior.

**Cognitive Control:** human functioning relies not only on external stimuli, but also on cognitive factors of observation, emotion, and action at any given moment. Cognitive functioning regulates human behavior through several forms including the cognitive representation of conditions of reinforcement typically resulting in improved behavioral change (Bandura 1977, Bandura 1971). “Human behavior is regulated to a large extent by anticipated consequences of prospective actions” (Bandura 1971, pg. 36). Beliefs in anticipation of reinforcement outcomes often outweigh the influence of experience consequences. Actions may be powerfully controlled by subjective contingencies that the behavior remains unaffected by its external consequences (Bandura 1977, Bandura 1971).

**Reinforcement Control:** behavior is extensively controlled by its consequences. Behavioral responses that result in unrewarding outcomes or that have negative effects tend to be discarded, whereas those that produce rewarding outcomes are retained and strengthened (Bandura 1971). Social learning theory posits a wider range of reinforcement influences beyond behavior regulation by external sources of direct experience consequence. “People are not only affected by the experiences created by their actions; they also regulate their behavior to some extent on the basis of observed consequences, as well as those they create for themselves” (Bandura 1971, pg. 20).

**Self-Efficacy**

Self-efficacy is the belief system by which a person believes they can produce desired effects by their own actions is imperative in order for them to act or to persevere in the face of difficulties (Bandura 1991, Bandura & Ozer 1990, Bandura 1982, Bandura 1977). “Whatever other factors serve as motivators, they are rooted in the core belief that one has the power to produce changes by one’s actions” (Bandura 1999, pg. 28). Self-efficacy beliefs are the
foundation from which people choose which challenges to undertake, how much effort to invest in their pursuits, and how long to persevere in the face of difficulties. Perceived self-efficacy influences the level of motivation through outcome expectations, and has therefore also been conceptualized as expectancy-value theory (Bandura 1991, Bandura & Ozer 1990, Bandura 1982, Bandura 1977). “In this view, motivation is the product of the expectation that a given course of action will produce certain outcomes and the value placed on those outcomes” (Bandura 1991, pg. 28). Self-efficacy beliefs also influence thought patterns that can improve or weaken performance outcomes.

People construct anticipatory cognitive scenarios and visualized futures and use them to guide their actions. Those of high efficacy visualize success scenarios that provide positive guides for performance, whereas those beset by doubts about their efficacy visualize failure scenarios that undermine performance by dwelling on how things might go wrong. They take a future time perspective in structuring their lives, and view impediments in difficult pursuits as surmountable through personal development and perseverant effort (Bandura 1991, pg. 29).

**Health Belief Model**

From a preventative standpoint, the healthcare field can be looked at as a model for creating change in individual behavior from unhealthy lifestyles to healthy living through education, increased awareness and capacity building of healthy lifestyles.

Since individuals encounter health challenges during their lifetime, individual response to these challenges shapes the outcome of lives and communities. “Many solid examples exist of how change, beginning with a mission, can happen on an individual level and also on a larger scale in cultures, communities, and society in general” (Groppel 2011, pp. 38). To guide educational programs in an attempt to create behavioral change for health, several theories of behavior change were utilized or developed including Ajzen and Fishbein’s theory of planned behavior or reasoned action, Bandura’s social learning theory, the health belief model, and the PRECEDE model (Mullen et al. 1987, Bandura 1986, Ajzen & Fishbein 1980).
Developed in the 1950’s by Hochbaum and associates in the U.S. Public Health Service to explain public participation in screening programs (Mullen et al. 1987, Janz & Becker 1984). The Health Belief Model consists of the following dimensions: perceived susceptibility, perceived severity, perceived benefits and perceived barriers (Janz & Becker 1984). The model asserts that readiness to take action stems from a perceived threat coming from an individual’s susceptibility to that threat and its potential severity. The cue for action can be triggered by an individual’s private perception or by learning about the threat. Behavior is evaluated based on an estimate of the potential benefits of an action to reduce susceptibility or severity. The identified benefits are then weighed against perceptions of physical, psychological, financial, and other costs or barriers inherent in the effort. Demographic, social, environmental, structural and personality factors are included in some versions of the model as modifying factors since in theory they indirectly influence actual behavior (Mullen et al. 1987, Janz & Becker 1984).

**Individual Motivation (Awareness of Threat)**

One example in what creates behavior change on an individual level within the health field is awareness, recognition and acceptance of the issue. Often when an individual envisions their children and loved ones being affected by their condition if they do nothing about it, they take action and change their behavior for the better (Groppel 2011).

**Community Behavioral Change**

Another model which ascertains how communities implement actionable change is the healthcare and community activation sector.

Community activation can be defined as organized efforts to increase community awareness and consensus about a...problem; organizational and interorganizational planning and coordination to effect change in the social and physical environments of a community; inter-organizational allocation of resources to activities, programs, and policies directed at changing normative patterns of...behavior; and citizen involvement in these processes (Von Korff, Wickizer, Maeser, O’Leary, Pearson & Beery 1992, pg. 110).
The health status of a community is influenced by individual characteristics and lifestyle behavioral patterns. Findings continue to show that these influences are significantly determined by the different social, economic and environmental circumstances of the individuals within the community (Nutbeam 2000).

**PRECEDE Model**

‘PRECEDE’ is an acronym for “predisposing, reinforcing, and enabling constructs in educational diagnosis and evaluation” (Mullen et al. 1987, pp. 974). Like the health belief model, the PRECEDE model focuses on behavior that is related to health but differs because it does not view behavior as a direct outcome of health. This model is the most inclusive, encompassing all of the health benefit model variables and highlights factors other than predisposing variables (Mullen et al. 1987).

Three categories of prebehavioral factors within the PRECEDE framework include:

1. **Predisposing factors** or personal preference and prior motives that people bring to an educational experience, including knowledge, attitudes, beliefs, values and perceptions that either support or inhibit behavior.
2. **Enabling factors**, which are objective characteristics of an individual, community, and environment that facilitate action on behavior and may precede motivation.
3. **Reinforcing factors** or rewards or punishments, including social support following a behavior or anticipated as a consequence of it (Mullen et al. 1987, pg. 974).

Fishbein and Ajzen’s theory, and the self-efficacy construct from the social learning theory (Bandura 1991), can be considered predisposing factors and refer to beliefs about one’s ability to execute specific behaviors. These are not the same as an expectation of outcomes or actual individual skill-sets. Thus, one may believe that a specific behavioral action is effective and actually possess the skills required to enact the personal change, yet still lack the confidence in being able to do so (self-efficacy) (Mullen et al. 1987). PRECEDE’s predisposing category is too broad to identify which types of variables should be emphasized, and does not specify relationships as does the Fishbein/Ajzen model (Mullen et al. 1987).
These theories have helped to identify and explain the complex relationships between knowledge, beliefs and perceived social norms, and provide practical support on the content of educational programs that encourage behavioral change for a particular situation (Nutbeam 2000).

In disease prevention, health education is key in the social context of behavioral decisions and focuses on helping people to develop personal and social skills required to make positive behavior decisions (Nutbeam 2000). Achieving sufficient levels of literacy on an individual level, builds the overall capacity of a community to respond and make the changes it requires to adapt to any situation. In the context of health and community activation, increasing the level of health literacy can overcome the barrier of educating patients, and may address a major cost to the health care industry through inadequate or inappropriate use of medicines (Nutbeam 2000).

Achieving different levels of literacy and their practical application in everyday life include:

- **Basic/functional literacy**: sufficient basic skills to be able to function effectively in everyday situations.
- **Communicative/interactive literacy**: more advanced cognitive and literacy skills which, together with social skills, can be used to actively participate in everyday activities, to extract information and derive meaning from different forms of communication, and to apply new information to changing circumstances.
- **Critical literacy**: more advanced cognitive skills which, together with social skills, can be applied to critically analyze information, and to use this information to exert greater control over life events and situations (Nutbeam 2000, pp. 263-264).

But in the past, promoting healthy lifestyles focused on the transmission of information without attempting to understand the relationship between communication and behavior change (Nutbeam 2000). Focusing only on the transmission of information does not achieve the desired results, not do results happen if an action campaign fails to take into account the social and economic circumstances of individuals and their communities (Nutbeam 2000). Health and community activation programs that have relied primarily on communication and education have mostly failed to achieve substantial and long-term sustainable results in terms of behavior change (Nutbeam 2000). It is well documented and understood that addressing specific health problems
and achieving a greater equity in community health through “education alone is generally insufficient to achieve major public health goals” (Nutbeam 2000, pp. 261).

Going beyond behavior change programs that rely solely on communication and education is key. A more comprehensive approach is required to increase the chances of success. This type of an approach acknowledges social and environmental influences on lifestyle choices and addresses such influences alongside efforts to communicate with and educate people (Nutbeam 2000). For example, the effort to communicate to people the benefits of not smoking as a healthy lifestyle choice requires a more comprehensive approach. This approach not only communicates the risks of tobacco use, but implements strategies to reduce demand through restrictions on promotion and increase in price, to reduce supply by restrictions on access, and to reflect social unacceptability through environmental bans. This more complete approach is not only addressing the individual behavior, but also the underlying cultural, social and environmental influences of the unhealthy behavior (Nutbeam 2000).

**Community Extension Programs**

In support of community and individual behavioral change, the creation of formalized institutions, and government support for those institutions, to support the change required is vital. Community extension programs are a pre-existing model of concrete change that can provide us with many insights, and may even have an infrastructure already set in place to help increase a community’s capacity to respond to the demands of resiliency preparedness in the face of peak-oil and climate change.

**Definition & History of Community Extension Programs**

Community extension programs can be analyzed as models of implementation to help us understand how those initiatives move from amorphous to concrete within the process of making change. Agricultural extension (also known as the Cooperative Extension System, or CES) derived from land-grant universities in 1914 by the Smith-Lever Act with the aim of bringing
research and educational programs developed at universities and agricultural research stations to the broader public (Brugger & Crimmins 2015). This system was intended to strengthen democracy by extending access to higher education to rural and low-income communities who previously had little access. The USDA Natural Resource Conservation Service (NRCS) was originally established as the Soil Conservation Service in 1935 to help address the wastage of soil and water resources on farm, grazing, and forestlands. This was achieved through demonstration projects across the country to show landowners the benefits of conservation efforts. Today, there are over three thousand conservation districts across the country (NRCS n.d.). Extension is focused on research, technology, and education (Milburn, Mulley & Kline 2010). To carry out these activities, extension agents were established within each county of each state, where they are able to interact with local residents as a public service mission to educate and address local issues (Brugger & Crimmins 2015). At the core of this extension system was the dissemination of knowledge and the information sharing of ideas between agricultural practitioners and researchers to solve problems in farming and rural life (Rolls, Jones & Garforth 1986). The philosophy of extension programs is that knowledge shapes communities and is a powerful force for positive change. Extension programs work from the premise that education and knowledge are powerful tools in the community-shaping process and therefore play a significant role in community evolution (Bowling & Brahm 2002).

A Model for Implementation

Extension programs have a multitude of models, which they employ to achieve their desired goals of positive community change and knowledge dissemination. These implementation models are utilized depending upon the context of the program. Extension models have moved away from an original/traditional deficit model utilizing one-way communication and flow of information from ‘expert’ to ‘non-expert’ to a contextual model of two-way communication. This shift from a linear model to a convergent model of communication focused on participatory models was appropriate due to changes from a focus on

The holistic, participatory model has a central focus designed to encourage and increase independence and self-reliance in order to make change within a community (Baker 1989). This model is of great relevance to increasing community capacity for post-peak oil and climate change resiliency planning through individual and community self-reliance empowerment. When a community is inherently engaged and participating in any planning or decision-making process, individuals accept an ownership and personal investment in the outcome, which provides a heightened level of resiliency (Rolls et al. 1986). Members of an area who have a sense of ownership in the decision-making of their community are more apt to be prepared in the face of adversity.

Extension systems posit that communities are capable of increasing their capacity and guiding their own evolution through knowledge created in universities and within the community. “What people know about themselves, their history, their community, and the world around them shapes their image of what is possible for their community” (Bowling & Brahm 2002, pg. 2). Increasing community capacity is about building networks that help citizen’s access information, ideas, influence, and resources so that goals can be accomplished. When communities improve their capacity, they can make change happen. Communities that have a rich and diverse stock of networks and civic associations are less vulnerable, and can more easily tackle problems (Scheffert, Horntvedt & Chazdon 2008).

The participatory extension model begins with changing behavior through shared knowledge and embedded values that community members use to build images, skills, and practices that ultimately shape the way they live, work, and play together. Collectively, this is what re-shapes the community (Bowling & Brahm 2002). “By using processes that focus on community members at their very best and the self-organizing aspects of their communities, Extension can simultaneously extend and accelerate the rate of desired behavioral change and
therefore improve effectiveness” (Bowling & Brahm 2002, pg. 3). This process empowers citizens to reshape their communities.

Community development professionals bring citizens together to reflect on their positive experiences of living in their respective communities, which can be a powerful tool for sharing knowledge and ultimately understanding and building a healthier community (Bowling & Brahm 2002). Extension agencies provide this type of inherent leadership within a community, better positioning the community for creating change. The Cooperative Extension System’s (CES) existing social capital, system of county agents, and extended network of information producers and users can reduce the cost of creating participatory change (Brugger & Crimmins 2015).

Brugger and Crimmins’ (2015) work shows how well positioned the U.S. Cooperative Extension System (CES) is to support local-level adaptation to climate change by decreasing vulnerability and increasing adaptive capacity. They argue that the CES has a flexible organizational structure and existing social capital that provides a distinct advantage for addressing four specific challenges they identify to local-level adaptation: 1) bridging research and local cultures, 2) obtaining knowledge that is relevant to local contexts, 3) providing ongoing monitoring and evaluation, and 4) connecting insights from local efforts to other localities and to planning and implementation processes at higher political levels (Brugger & Crimmins 2015). Applied to the context of climate change and post-peak oil, this pre-existing social capital and organizational infrastructure is poised to implement an action plan for resiliency through its well-established local networks of trust and information and a wealth of resources (Brugger & Crimmins 2015). With these systems already in place, it makes disseminating information and getting community member support faster and easier. The response time for a community to prepare itself and increase its adaptive capacity by utilizing a pre-existing system like an extension program is greatly decreased while increasing its ability to stand resilient to any potential detrimental effects of climate change and post-peak oil (Brugger & Crimmins 2015, Masterson et al. 2014, Tierney 2014, Comfort et al. 2010, Beatley 2009).
Extension facilitates the implementation of its programs by:

Support through federal legislation and ongoing funding that provide program continuity.
A public service mission that mandates organizational support.
Substantial social capital generated over the life of the CES
Access to local knowledge and relationships, with the ability to monitor local conditions.
A local focus, which supports local expertise and programming important to local communities.
A nonhierarchical network structure that promotes interdisciplinarity, flexibility, and bridges the boundaries of localities and levels of political organization (Brugger & Crimmins 2015).

CES provides characteristics that have the ability to support the implementation of resiliency plans and climate change adaptation by decreasing vulnerability while increasing adaptive capacity through ongoing evaluation and adjustment of adaptation strategies, flexibility, capacity to anticipate future adaptation needs, and sharing lessons learned across localities and political levels (Brugger & Crimmins 2015).

### Barriers to Implementation

The Extension model has experienced a decrease in public demand over the years, due to shifting priorities (Milburn et al. 2010, Schuchardt & Cunningham 1987). For example, loss of jobs and a declining agricultural population coupled with industrialization has resulted in a drastic decline in demand for rural extension, while urban populations (and demand) soar. In addition, community extension has experienced declining political support, which impacts its resourcing and effectiveness (Milburn et al. 2010).

Although ample research exists in documenting community extension benefits, there is difficulty documenting and measuring the efficacy of extension programs and demonstration of an economic benefit or return on investment of specific initiatives (Purcell & Anderson 1997, Bunting 1986, Baker 1978). CES’s capacity for formal evaluation of implementation programs may be low as Extension agents may have little training in evaluation (Brugger & Crimmins 2015). This can create a lack of public support, and encourage belief in research-heavy models to provide sound technical and economic options for change (Rolls et al. 1986). Additionally, as
politicians came to believe that community members would more readily access information via
the internet and from private sector experts, extension field staff became viewed as obsolete in
disseminating information (Rolls et al. 1986).

There are many barriers to achieving change through models such as that used in
Community Extension. The CES model experienced barriers creating change due to its
significant gaps in geographical breadth and ability to reach diverse groups (Brugger & Crimmins
2015). Extension programs have had difficulty in bridging the gaps between cultures, languages,
values, expectations, and priorities of researchers and community members in order to establish
trust with all stakeholders (Brugger & Crimmins 2015, Reid, Alam, Berger, Cannon, Huq &
Milligan 2009).

Any model that experiences declining funding and political support will find it difficult to
be successful at creating change (Milburn et al. 2010). A lack of an adequate budget is especially
difficult, but could be addressed by changing the allocation of human and financial resources and
distributing resources according to priority (Blackburn & Flaherty 1994, Gustafson 1991).
However, the greatest barrier creating change is a lack of financial and human resources due to
decreased funding and support for the organization at all levels nationwide and changing funding
mechanisms. This threatens the continuity of programs, relationships with clients, and trust in the
organization (Brugger & Crimmins 2015).

Factors in Creating Change

Community extension programs have at one time or another experienced beneficial
factors that have helped them accomplish concrete change. When there is an increase in
grassroots public demand for education, extension can be a successful model for positive change.
Extension works especially well when in partnership with other organizations, universities, and
local governments to facilitate community education and individual empowerment (Milburn et al.
2010).
By focusing on local knowledge, a community builds its capacity to create change through validating local experience and integrating inclusive participatory research methods within community extension programs. Extension further succeeds in creating change through diversifying its services and meeting the needs of a multi-faceted community by employing a staff of specialists and generalists. The use of sophisticated technology in creative ways, supplements this diverse approach by providing multiple platforms and interactive paths for information to flow. Benefits of increased community capacity are summarized as: stronger communities, better education, economic prosperity for peoples and communities, individual well-being and public health (Scheffert et al. 2008).

Opportunities for personal interaction are more likely to initiate or change behaviors as compared to one-way forms of communication such as web-based information (Milburn et al. 2010). With extension’s well-established field staff, community extension programs are poised to play a key role in creating change.

As a model for implementation of community and individual behavioral change, community extension programs hold great promise for assisting in the implementation of climate action plans. Provided that certain barriers to the success of a community extension program are addressed, such as funding and government support, it’s pre-existing programmatic infrastructure for disseminating knowledge on a local level with face-to-face interaction and community-wide trust, are key factors that can have a significant impact to successfully implement post-peak oil and climate action plans while increasing a communities overall adaptive capacity. Community extension programs flexibility and ability to adjust to the changing political-socio-economic situation of local communities, puts the model for community and individual change in a position to effectively meet the changing adaptation needs and challenges on a local level while organizing around emerging national issues (Brugger & Crimmins 2015).
Table 2: Cooperative Extension System Barriers and Supporting Factors

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<th>Barriers</th>
<th>Supporting Factors</th>
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<td>Grassroots Demand &amp; Community Partnership</td>
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<td>Lack of Documentation of Impact</td>
<td>Using Local Knowledge</td>
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<td>Failure to Reach Diverse Populations</td>
<td>One-On-One Personal Interaction</td>
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<td>Declining Funding and Support</td>
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Summary: Implications of Change Models for Resiliency Planning

Going green in terms of the environment is an example of behavioral change happening on a community and cultural level. After a growing awareness of the harmful effects of human behavior to environmental destruction and devastation peaked in the 1970’s, society internalized and recognized that serious change was not only necessary but of epic importance (Groppel 2011). From this new cultural mission to change individual behavior for a cleaner and more sustainable environment, an action plan then followed which supported society at large to change behaviors as necessary to achieve these goals. Children were taught about conservation in schools such as recycling, and they brought this knowledge home to their parents who began adopting these practices into their daily lives. Today, recycling is a normal behavioral pattern, littering is not accepted, and natural resources are better protected. Meaningful behavior change was achieved in this example due to the presence of the following elements of change: identification of the mission, an honest assessment of the old story, the development of a new story that is aligned with the mission, and the action plan to bring about the necessary changes (Groppel 2011).

Implications for resiliency planning are that the following factors must be in place to create change based on CES community extension program model:

a. Change Focused
b. Government support
c. Community engagement
d. One on one contact (face to face interaction)
e. Local-based programs and staff

With the support of an existing community extension model, a comprehensive understanding of the insights for individual and community-scale behavioral change models is necessary to further address the gaps in the planning model. In order to engage a community into action for the successful implementation of a community action plan, efforts must be made to understand behavioral change on both scales.

Ajzen and Fishbein’s Theory of Planned Behavior and Reasoned Action implies that an individual’s attitude and therefore intentions, inform behavior. This theory informs us that beliefs, attitudes and an individual’s motivation to conform to social or cultural norms can significantly impact and change behavior.

Bandura’s Social Learning Theory model entails that behavioral changes are achieved through more of a social context of observation and perceived relationship between an individual’s behavior and its consequences. This model provides behavioral change within an individual through these areas:

- Learning by Direct Experience & Observation of Consequences: reward and punishment.
- Cognitive Capacity: higher mental process with the ability to foresee probable consequences of a variety of behaviors and to alter actions accordingly.
- Self-Regulatory Processes: regulatory processes that control behavior include stimulus, cognitive, and reinforcement control.

The Self-Efficacy model highlights individual behavior influence based upon one’s perceived beliefs that they can produce a desired outcome by their own actions in order to persevere in a given situation or set of circumstances. In this model, motivation is the product of the expectation that a given course of action will yield a particular outcome when an individual places a value on that outcome. This model includes the power of intentional thought and visualization that can provide intuitive guides for performance and positive behavioral change. This model supports the need for positive messaging throughout the community.
The Health Belief model affirms education and increased awareness through effective communication can shape the outcome of lives and communities. The Health Belief model consists of perceived susceptibility, perceived severity, perceived benefits and perceived barriers. If an individual’s behavior is to take action, it is due to a perceived threat stemming from a perceived susceptibility to that threat and its potential severity. An individual learning about the threat and their perception of it triggers the cue for action.

The Community Activation model can inform creating behavioral change on a community-scale. Through an organized effort to increase community awareness through education, activities, programs and the allocation of resources can change normative patterns of behavior and communities as a whole.

The PRECEDE model looks at prebehavioral factors such as:

- Predisposing Factors: or personal preference and prior motives including knowledge, attitudes, beliefs, values and perceptions that either support or inhibit behavior.
- Enabling Factors: such as objective characteristics of an individual, community, and environment that facilitate action on behavior and come before motivation.
- Reinforcing Factors: rewards, incentives or punishments, including social support following a behavior or anticipated as a consequence of it.

These supporting theories aid resiliency planning in moving from idea and vision, to implementation.
CHAPTER 3: BACKGROUND

Project Site Description

The City of San Buenaventura (Ventura), located on the coast in Ventura County, California, is considered one of America’s most livable communities and thought of as a hidden gem by its locals (City of Ventura 2010). The City of Ventura and local non-profits have initiated many environmental programs and incorporated climate change considerations into a unique sense of stewardship within the community. It is important to understand the context of the City of Ventura in order to examine the factors influencing, and barriers preventing the development of concrete action for resiliency in the City of Ventura.

Geography

Located approximately 70 miles west of Los Angeles between Malibu and Santa Barbara on the Pacific Ocean, Ventura County’s communities rest upon a coastal plain surrounded by hills. The City of Ventura lies at the north end of this plain with the western portion of the City stretching North along the Ventura River, South to the Santa Clara River, steep slopes of the Ventura foothills to the North and East, with the Pacific Ocean to the West. Much of the eastern portion is on relatively flat alluvial coastal plain (Chen, Deines, Fleischmann, Reed & Swick 2007). According to the United States Census Bureau in 2010, Ventura has a total area of 32.1 square miles (83 km²), of which 21.7 square miles (56 km²) is land and 10.4 square miles (27 km²) is water (US Census Bureau 2014).

Typical of most coastal Southern California cities, Ventura boasts a mild Mediterranean climate, with a coastal sea breeze off of the Pacific Ocean moderating temperatures to an average yearly high of 70°F and 49°F low. Average yearly precipitation amounts to approximately 14.7 inches (based upon the Period of Record: 1/1/1900 to 2/28/2013) (Western Regional Climate Center 2015). Reflective of its favorable geography and climate, Ventura is a place rich with natural resources and diverse habitats, wildlife and plant communities.
History

People have lived along this stretch of the California coast for at least ten thousand years. Originally home to the Chumash Indians, the region was settled in the 18th century by Spanish missionaries who founded San Buenaventura in 1782 by Father Junipero Serra, the ninth of the California Missions. He named it after the Italian St. Bonaventure, hence the nickname that Ventura is the “city of good fortune” (Moore 2000, City of Ventura 2010).

The first oil well was drilled in Ventura County in 1865 near Ojai; it was the first well in California. In 1885, oil was discovered on the Westside, north of Ventura’s downtown. It was a discovery that would change the city and region’s development pattern by prioritizing transportation and settlement patterns around a growing oil industry (Jackson 2005). The Union Oil Company was organized in 1890, and still has offices in Santa Paula to this day. An oil strike in 1914 fueled rapid growth. The large Ventura Oil Field was first drilled in 1919 and at its peak produced 90,000 barrels per day. Production of barrels of oil in December 1929 was 1,889,245 and averaged 60,943 barrels per day. A barrel contained 42 gallons of oil (Jackson 2005). Shell Oil Company had 185 active producing oil wells on the Avenue at that time. By 1930, because of the booming oil industry, the population doubled to 11,603 residents.

Ventura was incorporated in 1866, and would remain isolated from the rest of the state. Ventura became the County seat when Santa Barbara and Ventura Counties split in 1873. That same year, a courthouse and wharf were built, a bank was opened and the first public library was created (City of Ventura 2010). In the years following World War II, farmland gave way to outward suburban development. By the 1950’s, the region was growing rapidly and the population reached 16,643 with the use of automobiles (Jackson 2005). Ventura grew eastward with expansive residential developments encroaching on the agricultural land in the Santa Clarita Valley. Roads were paved over, and Highways 101, 126 and 33 were cut through the region as oil was woven into the fabric of everyday life (Chen et al 2007). In an attempt to minimize the impacts of further outward growth into crucial agricultural land that surrounds the existing
community, the City worked to establish a strategy of “in-fill first” in the Smart Growth based 2005 General Plan. At the time it was adopted, it was considered visionary (City of Ventura 2010). Current 2014 estimated population is 109,484 (United States Census Bureau 2014).

**Demographics**

As of 2013, the City of Ventura had a population of 108,817 with 60% identified as White, and 30% identified as Hispanic or Latino. 88.4% had high school diplomas, while 32.5% held college degrees. Both percentages were higher than the state averages of 81% and 30% respectively. The average mean travel time to work was 22.3 minutes for workers age 16+. Home ownership rate was 54.8% with only 28% housing units in multi-unit structures. The median value of owner-occupied housing was $445,900 ($383,900 was the state average). Per capita income was $31,910, while the median household income was $66,586. 10.6% of the population was considered to be living below the poverty level (United States Census Bureau 2014).

According to the 2040 Population Forecast: Ventura Cities and County report done in May 2008 by the Ventura Council of Governments (VCOG), the City of Ventura was forecasted in 2040 to grow to a population of 137,600, with 49% identified as White; 43% identified as Hispanic; and 0.08% identified as Other (Ventura Council of Governments (VCOG) 2008).

**Economics**

The economic make up consists of 55% service, retail/wholesale, government; 16% F.I.R.E. (finance, insurance & real estate); 14% manufacturing, transmission and utilities; 15% construction, agriculture. These areas translate to $8.5 billion GCP (17% of County economy); $2.1 billion in retail sales (20% of County share); 1.5 million visitors annually, spending $715 million (City of Ventura Economic Development Department 2011).
**Economic Trends**

The recent recession began in 2008, and had an impact on the City of Ventura, as it had throughout North America. Ventura County’s economy shrank at a rate about five times faster than Los Angeles County to the south (Watkins 2009). In the City of Ventura’s current Economic Development Strategy 2013-2018, the recession and loss of redevelopment funding inspired an approach that looked beyond the “traditional” strategies employed by economic development agencies towards a more innovative focus on partnerships, collaboration and targeted infrastructure investments (City of Ventura Economic Development Strategy 2013).

The current Economic Development Strategy concentrates on six economic focus areas through 2018. These focus areas include:

1) Responsive and Effective Government

The City’s Economic Development Department looks to collaborate with local businesses and organizations to be more “business friendly”, and to improve three aspects of the City’s operations:

   a. Customer Service
   
   b. Efficiency
   
   c. Communication (City of Ventura Economic Development Strategy 2013)

2) Tourism, Retail, and Quality of Life

In 2011, Ventura’s transient occupancy tax receipts totaled $3.8 million, and taxable room sales were $37.6 million, a 14% increase from 2010 (City of Ventura Economic Development Strategy 2013). Occupations in Accommodation and Food services comprised 9.5% of jobs in the City of Ventura in 2010, fourth to healthcare, public administration, and retail trade. Sales tax receipts increased by 7.9% between FY2011 and 2012. New auto sales, restaurants, and service stations, respectively lead as sales tax revenue generators. Ventura supports 6,461 retail trade jobs, which makes up 12.6% of total employment. Arts and culture
play an important role in the local economy, generating an estimated $18.5 million annually (City of Ventura Economic Development Strategy 2013).

Ventura owns and operates 37 parks, recreation facilities, and museums covering over 800 acres providing opportunities for sailing, swimming, skateboard facilities, tennis and basketball courts, sports fields, hiking and walking trails, a swimming pool, and cultural learning (City of Ventura Economic Development Strategy 2013).

3) Healthcare and Biomedical

The healthcare field is the largest employment sector in the City of Ventura, comprising 18.6% of total jobs. Ventura has four hospitals: Community Memorial Hospital, Ventura County Medical Center, Ventura Convalescent Hospital, and Aurora Vista Del Mar Hospital, as well as a Kaiser Permanente medical office. Community Memorial Hospital is the top ranked employer in the City of Ventura (City of Ventura Economic Development Strategy 2013).

4) Manufacturing

The City of Ventura has 667 parcels zoned for industrial use, totaling approximately 500-acres. Manufacturing comprises 7.7% of jobs (3,929), with 162 manufacturing businesses located within the city limits. Additionally, the value of shipped goods manufactured in Ventura is $457,072,000 annually. The majority of the City of Ventura’s largest revenue generators are small to medium-sized manufactures that produce supplies for oil, medical, transportation, construction, food, and electronics industries locally and internationally (City of Ventura Economic Development Strategy 2013).

5) Regional Agriculture and Food

With $43.5 billion in revenue representing 11.6 percent of the U.S. total, California is the No. 1 state for agricultural revenues (California Department of Food & Agriculture 2011). Agriculture and agriculture related businesses account for 4.4% of overall economic activity in Ventura County, generating $2.1 billion in revenue and $76 million in indirect business taxes annually. In 2011, the estimated gross value of crops grown in Ventura County was $1.8 billion,
according to the Ventura County Farm Bureau. Farming and farm related businesses provide an estimated 31,000 jobs in Ventura County.

Agriculture, forestry, fishing, and hunting makes up 531 (1%) of jobs in the City of Ventura. However, 4% of Ventura residents work in agriculture, which means that 1,107 employees who reside in Ventura travel elsewhere to work. The City has 6,857-acres of agriculturally designated land, all of which is preserved exclusively for agricultural use until 2030, pursuant to the Save Our Agricultural Resources (SOAR) initiative approved by voters in 1995.

In 2011, fishing companies based in the Ventura Harbor created $46 million in economic activity and the equivalent of 378 fulltime jobs, which comprises 71% of the jobs in agriculture, forestry, fishing, and hunting (City of Ventura Economic Development Strategy 2013).

6) Entrepreneurship & Small Businesses

In Ventura County, small business employees account for 62% of the employment base. Home-based businesses make up a significant component of the City of Ventura’s economy. Over 2,000 residents own and operate businesses from their homes. The City of Ventura views small businesses as a major component of the local economy that should be supported (City of Ventura Economic Development Strategy 2013).

Challenges for the City of Ventura lie within the agricultural sector, a major economic generator in the region, in responding to the changes in climate and cost of petroleum-based agricultural products used in current conventional practices. Climate change impacts on ocean temperatures and processes will impact fisheries in the region, another major economic contributor to the area.

Political Structure

The City of Ventura operates under the “Council/Manager” form of government under a charter adopted by voters in 1934, with an elected seven-member City Council. The Mayor is chosen from among the City Council and serves a term of two years (City of Ventura 2010). The
political structure of any community vulnerable to the effects of post-peak oil and climate change has a huge impact on the potential success of a community action plan and its ability to be resilient in the face of such adversity. Political will and the interagency relationships set the foundation for a community’s chances in planning for risks and uncertainties.

**The Context of Action Planning**

The context for resiliency and action planning for the City of Ventura is impacted both the characteristics of the community and by the larger theoretical knowledge base on action planning, as well as the Federal, State, Region, County and Municipal planning regulations and actions.

**Federal Role in Resilience Planning**

The 1997 Kyoto Protocol, an international treaty extending the 1992 United Nations Framework Convention on Climate Change (UNFCCC), was not signed by the United States and therefore is non-binding unless ratified (United States Environmental Protection Agency 2013). In the absence of federal legislation, much of the federal activity on climate change is taking place under the existing authority of the United States Clean Air Act (CAA), which is administered by the United States Environmental Protection Agency (EPA). The EPA has been regulating greenhouse gas (GHG) emissions from mobile and stationary sources of air pollution since 2011 (United States Environmental Protection Agency 2013). This effort includes a number of focused actions by the EPA that include:

- Collecting Emissions Data: through the Inventory of U.S. Greenhouse Gas Emissions and Sinks program.
- Regulatory Initiatives: that reduce GHG emissions and promote a clean energy economy.
- Mobile Source Regulations Include:
  - Light-duty vehicle GHG National Program, and Heavy-duty engines and vehicles National Program.
  - The Renewable Fuel Standard (RFS) regulations.
  - In June 2009, California was granted a CAA waiver of preemption to implement its own GHG emission standards for motor vehicles.
- Stationary Source Regulations Include:
  o Carbon Pollution Standards for Power Plants
  o Final GHG Tailoring Rule
  o Landfill Air Pollution Standards
  o Oil and Natural Gas Air Pollution Standards
  o Geologic Sequestration of Carbon Dioxide
    (Environmental Protection Agency 2015) (see Appendix D for a more detailed description of Federal Legislation).

In June 2013, President Obama released The President’s Climate Action Plan through the Executive Office of the President. Though no specific national legislation has resulted as of the writing of this thesis, it outlines actions to be taken in three major areas that include: cutting carbon pollution in America; preparing the U.S. for the impacts of climate change; and leading international efforts to combat global climate change and prepare for its impacts (Executive Office of the President of the United States 2013).

In August 2015, President Obama announced the release of the final “Clean Power Plan” developed by the EPA that outlines “strong but achievable standards for power plants, and customized goals for states to cut the carbon pollution that is driving climate change, the Clean Power Plan provides national consistency, accountability and a level playing field while reflecting each state’s energy mix” (United States Environmental Protection Agency 2015, n.p.). Under the plan, states are required to meet specific carbon emission reduction standards, based on their individual energy consumption, including an incentive program for renewable energy and low-income energy efficiency (United States Environmental Protection Agency 2015).

**National Policy on Post-Peak Oil**

Currently, there is no national effort to specifically address peak oil and prepare for a post-peak oil future. The 2006 *National Action Plan for Energy Efficiency Report* authored by the EPA, overlooks the impacts of national dependence upon oil while focusing primarily on electric and natural gas energy efficiency (United States Department of Energy and United States Environmental Protection Agency 2006), while the *National Action Plan for Energy Efficiency Vision for 2025: A Framework for Change*, presents ten implementation goals to achieve energy
efficiency by 2025 along with five policy recommendations (United States Department of Energy (2008), United States Environmental Protection Agency (2015).

**State Role in Resilience Planning**

Many states, including California, plan for resilience in the form of disaster management plans, and encourage local municipalities to develop emergency management preparedness plans based on extreme climate change events such as sea-level rise, hotter and drier summers, and a longer fire season. The focus of these plans is particularly on how these changes can impact critical infrastructure. This form of resilience and adaptive planning is developed primarily by Emergency Services Offices, like the State of California Governor’s Office of Emergency Services (State of California 2015). The two main attempts at resilience planning on a state level in California are in the form of the 2008 *Climate Change Proposed Scoping Plan*, and the 2009 *California Climate Adaptation Strategy*.

States and municipalities often function as “policy laboratories”, developing initiatives that serve as models for federal action. For example, California was the first state in the nation to set limits on greenhouse gases from cars and trucks (CARB 2014), and has a long list of climate change legislation including but not limited to:

- Assembly Bill 4420, September 1988: GHG emission inventory
- Senate Bill 1771, September 2000: California Climate Action Registry
- Assembly Bill 1493, July 2002: Reporting reductions to the Registry
- Senate Bill 812, September 2002: Added forest management to the California Climate Action Registry
- Senate Bill 107, September 2006: Increases the amount of renewable electricity (Renewable Portfolio Standard) generated per year.
- Assembly Bill 1504, September 2011: Forest resources and carbon sequestration bill (see Appendix E for a more detailed description of State Government Legislation).

The most crucial California State actions began in 2006 with AB 32, and in 2008 was closely followed with SB 375. Assembly Bill 32, September 2006, was perhaps the biggest watershed moment for California’s climate change legislation (CARB 2014). AB 32, the
California Global Warming Solutions Act, required the California Air Resources Board (CARB) to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990, to be achieved by 2020 through the development of a Scoping Plan that was first approved by the Board in 2008 (CARB 2008). The Scoping Plan must be updated every five years with the First Update to the Climate Change Scoping Plan approved by the CARB on May 22, 2014, which builds upon the initial Scoping Plan with new strategies and recommendations (CARB 2014). The First Update also includes a progress report towards meeting the 2020 GHG emission reduction goals, highlights the latest climate change science and provides direction on how to achieve long-term emission reduction goals described in Executive Order S-3-05 (CARB 2014).

AB 32 directs a Climate Action Team established by the Governor to coordinate the efforts set forth under Executive Order S-3-05 (2050 GHG Reduction Goal) to continue its role in coordinating overall climate policy (CARB 2008).

Senate Bill 375, September 2008, the Sustainable Communities & Climate Protection Act requires the Air Resources Board (ARB) to develop regional GHG emission reduction targets for passenger vehicles with targets for 2020 and 2035. SB 375 supports the State’s climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities (CARB 2015).

The Governor’s Executive Order # S-13-08, November 2008, directs state agencies to plan for sea level rise and climate impacts through coordination of the State Climate Adaptation Strategy. The Climate Adaptation Strategy is designed to enhance climate management strategies identified in the 2009 California Climate Adaptation Strategy and subsequent releases. These climate change impacts include sea-level rise, increased wildfires, biodiversity and ecosystem/habitat protection, public health consequences, water access and quality (water management plans), increased temperatures, shifting precipitation and extreme weather events. Emergency response strategies are to be developed through the review of the latest scientific research, leading to ongoing civic engagement and outreach.
The California Natural Resources Agency drafted the California Climate Adaptation Strategy focusing on adaptation strategies to climate change already affecting California, acknowledging that mitigation strategies alone would be insufficient. The report:

…summarizes the best known science on climate change impacts in the state to assess vulnerability and outline possible solutions that can be implemented within and across state agencies to promote resiliency (California Natural Resources Agency 2009, pg. 5).

In 2010 a First Year Progress Report was published, and a *Climate Adaptation Strategy Update* was completed in 2013, also known as the *Safeguarding California Plan*. The Safeguarding California Plan augments previously identified strategies in light of advances in climate science and risk management options.

The State of California has not produced a specific plan that addresses peak oil and its potential effects on the state.

**Regional Role in Resilience Planning**

As required by AB 375, the California Air Resources Board (CARB) set regional targets for Greenhouse Gas (GHG) emissions reductions for 2020 and 2035 for each region covered by one of California States Metropolitan Planning Organizations (MPO). The City of Ventura is within the Southern California Association of Governments (SCAG) MPO coverage area. Each MPO must prepare a Sustainable Communities Strategy (SCS) as part of its Regional Transportation Plan (RTP). Strategy areas within the SCS include land use, housing and transportation that, if implemented, would allow the region to meet its GHG emission reduction targets for 2020 and 2035 respectively (SCAG 2012). SCAG adopted its 2012-2035 RTP/SCS in April 2012.

AB 375 also establishes incentives to encourage local governments and developers to implement the SCS. On September 23, 2010, ARB issued a regional & per capita reduction target for the planning year 2020, and a conditional target of 13% for 2035. SCAG’s adopted 2012 SCS is expected to help California reach and exceed its GHG reduction goals, with
reductions in per capita transportation emissions of 9% by 2020 and 16% by 2035 (SCAG 2014).

According to SB 375, SCS requires each MPO to prepare a SCS, including the requirement utilizing the most recent planning assumptions considering local general plans and other factors. The SCS shall:

1) Identify the general location of uses, residential densities, and building intensities within the region;
2) Identify areas within the region sufficient to house all the population of the region, including all economic segments of the population, over the course of the planning period of the RTP taking into account net migration into the region, population growth, household formation and employment growth;
3) Identify areas within the region sufficient to house an eight-year projection of the regional housing need for the region;
4) Identify a transportation network to service the transportation needs of the region;
5) Gather and consider the best practically available scientific information regarding resource areas and farmland in the region;
6) Consider the state housing goals specified in Sections 65580 and 65581;
7) Set forth a forecasted development pattern for the region, which, when integrated with the transportation network, and other transportation measures and policies, will reduce the GHG emissions from automobiles and light trucks to achieve, if there is a feasible way to do so, the GHG emission reduction targets approved by the state board;
8) Allow the RTP to comply with the federal CAA (SCAG 2014, pgs. 174-175).

The nonprofit organization, Local Government Commission (LGC), developed the *Ahwahnee Principles* in 1991 as guidelines to help local governments build more livable communities and also serve as guides on policy matters (Allen, Anderson, Cook, Hosterman, Jackson, McKenzie, Murley, O’Connor, Syphers, Wilkinson & Winkleman 2008). The *Ahwahnee Principles* helped pave the way for the Smart Growth movement and has since worked to build awareness about the impact of land use decisions on transportation, natural resources, public health, climate change and fiscal strength (Allen et al. 2008). Additional work includes the *Ahwahnee Principles for Resource-Efficient Communities* (1991), the *Ahwahnee Principles for Economic Development* (1997), the *Ahwahnee Water Principles* (adopted by Ventura City Council on April 5, 2004), and the *Ahwahnee Principles for Climate Change* (2008). In the “21st Century Tool Kit” Attachment section of the 2005 Ventura General Plan, it is recommended that
the General Plan be updated to incorporate the Ahwahnee Principles (City of San Buenaventura 2005).

The Local Government Commission states that local governments are on the front line both in dealing with the impacts of climate change and in reducing greenhouse gas emissions. The *Ahwahnee Principles for Climate Change* provides specific guidance for local governments to address the challenges of climate change on a local level. The *Ahwahnee Principles for Climate Change* include:

**Community Principles**
1. Climate Action Plans for mitigating GHG emissions should be put in place by local governments.
2. Emissions related to personal auto use should be central to a Climate Action Plan and a priority for early implementation.
3. The Electricity and Commercial/Residential sector is an important target for reduction.
4. Climate Action Plans should include strong water efficiency standards, increased water conservation and water recycling strategies.
5. A Climate Action Plan should include measures that will help the community to adopt to the unavoidable impacts of climate change.
6. Local governments should lead by example.
7. Climate Action Plans should be developed through an open process that includes diverse members of the community and public health professionals.

**Regional Principles**
4) Each region should develop and adopt, with its cities and counties, a blueprint for growth that achieves regional GHG emissions reduction targets.
5) Regional Transportation Plans and major regional transportation projects should be consistent with the regional blueprint.
6) Projects consistent with the blueprint that support infill development and reduce single occupant vehicle trips should be given priority in funding and a streamlined implementation process.
7) Efforts should be made by regions to vocally support such projects and defend them against opposition.
8) Regional Housing Needs Assessments that recognize the difference between regions and between communities should be coordinated with and reflect Climate Action Plans and other mechanisms for GHG emission reductions.

**Implementation Strategy**
1. All General Plans and Climate Action Plans should be made consistent with the principles contained in the Regional Blueprint Plans and RTP.
2. General Plans and environmental review processes should be integrated with city and county Climate Action Plans to include climate change mitigation and adaptation measures and adoption procedures.
3. Zoning codes should be modified to be consistent with the General Plan to ensure implementation of the integrated General Plan/Climate Action Plan.
Performance and form-based codes should be used to achieve the specified outcome.

4. City and county policies should be made consistent with the goals of the community Climate Action Plan.

5. Monitoring and measurement of progress made in meeting both goals and targets set forth in the Climate Action Plan should be conducted regularly with results reported to the community.

6. When appropriate, communities should form joint powers authorities to jointly implement their climate action plans through developing sustainability corridors between two or more jurisdictions.

7. Cities and counties should coordinate with nearby jurisdictions and the regional government to share computer tools and other resources, and avoid duplicative efforts (Allen et al. 2008) (see Appendix F for more a more detailed description of the Ahwahnee Principles for Climate Change).

Currently, there is not a large regional role in resiliency planning for the impacts of post-peak oil in the Ventura Region.

**Ventura County’s Role in Resilience Planning**

Although the County of Ventura Board of Supervisors have been looking at planning to reduce GHG emissions of County government operations since 2006, the Ventura Council of Governments (VCOG) and the Ventura County Civic Alliance (VCCA) developed *A Compact for a Sustainable Ventura County* as a Compass Blueprint Demonstration Project. Phase One in 2008 and Phase Two in 2010 were developed with funding from SCAG.

As the regional Municipal Planning Organization (MPO) and regional planning agency, SCAG’s Sustainable Communities Strategy includes the *Compass Blueprint Growth Vision* for the region, and offers direct funding of innovative planning initiatives for member agencies through the Compass Blueprint Demonstration Projects. These projects enable municipalities to craft forward-thinking planning efforts based on four guiding principles: mobility, livability, prosperity and sustainability (SCAG 2012).

Ventura County does not currently have a plan in place to address the impacts of peak oil or to prepare the county for a post-peak oil future.
City of Ventura’s Role in Resilience Planning

The 2005 Ventura General Plan is the guiding document for the city’s future. California State law requires each city to adopt a comprehensive, long-term General Plan for the physical development of the community that guides local decision-making by expressing community goals about the future distribution and character of land uses and activities. The plan is to be comprehensive by both covering the City’s entire planning area and addressing the broad range of issues facing the community, including physical, social, aesthetic and economic concerns (City of San Buenaventura 2005). The plan must be internally consistent and serve as a long-term guide, establishing policies for day-to-day land use decisions over an approximately 20-year period, while being updated every 10 years (City of San Buenaventura 2005).

The 2005 Ventura General Plan is the second in a series of three connected documents intended to guide future conservation and change in the city. The first document was The Ventura Vision (2000), meant to serve as the shared vision for the community, and developed by the Seize the Future Citizens Outreach Committee. The Ventura Vision was guided by four broad principles that informed the community participation process and the resulting visions and strategies developed over a 2-year period after initiation by Ventura City Council in 2008. Four principles created five vision categories, which resulted in 10 strategies to help Ventura move towards its Vision (City of San Buenaventura & Seize the Future Citizens Outreach Committee 2000).

The final piece of the trilogy is a form-based Development Code. This code will represent a new approach to zoning that prioritizes the appearance of development, while still ensuring that neighboring land uses are compatible and appropriate (City of San Buenaventura 2005). The 2005 Ventura General Plan is to be put into action through the Ventura Development Code as well as a variety of other mechanisms, such as a mobility plan, specific plans, community plans, and capital improvement projects, that will together shape the future of Ventura. The 2005 Ventura General Plan purposefully anticipates the Code focusing on the
districts, corridors, and neighborhood center where future change will be most pronounced (City of San Buenaventura 2005).

The 2005 Ventura General Plan identifies ten goal areas:

- **Natural Community Goal**: To be a model for other communities of environmental responsibility, living in balance with our natural setting of coastline, rivers, and hillside ecosystems.

- **Prosperous Community Goal**: To attract and retain enterprises that provide high-value, high wage jobs; to diversify the local economy; to increase the local tax base; and to anticipate our economic future in order to strengthen our economy and help fund vital public services.

- **Well-Planned & Designed Community Goal**: To protect our hillsides, farmlands, and open spaces; enhance Ventura’s historic and cultural resources; respect our diverse neighborhoods; reinvest in older areas of our community; and make great places by insisting on the highest standards of quality in architecture, landscaping and urban design.

- **Accessible Community Goal**: To provide residents with more transportation choices by strengthening and balancing bicycle, pedestrian and transit connections in the City and surrounding region.

- **Sustainable Infrastructure Goal**: To safeguard public health, well being and prosperity by providing and maintaining facilities that enable the community to live in balance with natural systems.

- **Active Community Goal**: To add and enhance our parks and open spaces to provide enriching recreation options for the entire community.

- **Healthy & Safe Community Goal**: To build effective community partnerships that protect and improve the social well being and security of all our citizens.

- **Educated Community Goal**: To encourage academic excellence and life-long learning resources to promote a highly educated citizenry.

- **Creative Community Goal**: To become a vibrant cultural center by weaving the arts and local heritage into everyday life.

- **Involved Community Goal**: To strive to work together as a community to achieve the Ventura Vision through civic engagement, partnerships, and volunteer service (City of San Buenaventura 2005, pg. 2-3).

Many of the 2005 Ventura General Plan goals, if implemented successfully, have the ability to put the City of Ventura in an advantageous situation to effectively mitigate and adapt to the
effects of climate change and post-peak oil. In 2014, the City of Ventura is in the process of
developing a 10-year General Plan Refinement and states that it is:

a chance to ensure that our 10-year-old General Plan is in alignment with the
sentiment of the community on issues of growth and development to make sure
we are positioned to become the City we want to be and that we are serving the
needs of the business community and our residents. This includes ensuring that
all types of housing are included to create a balanced sustainable community
(City of Ventura 2013, n.p.).

Since the completion of the 2005 Ventura General Plan, the political environment within
the City Council has evolved. The mayor at the time the 2005 Ventura General Plan was drafted
was well known as a local environmental champion, while another Council Member was a well
known author and proponent of New Urbanism: a mixed-use, infill first, efficient mass
transportation urban planning approach. The award-winning 2005 Ventura General Plan was
considered a very forward thinking blueprint planning document. Now that it is in the process of
its ten-year update, those innovative and forward thinking Council Members are no longer on the
council. Without them and their institutional and political memory to carry forward the update
process, it is unknown how well the original planning vision will continue to be the basis for
political decision-making within the city.

The City of Ventura has not yet responded to AB 32 as required by the State of California
to develop a Climate Action Plan. The CARB Climate Change Scoping Plan adopted by the State
of California as directed by AB 32, calls for local governments as valuable partners in reaching
the goals of AB 32, to develop and implement local Climate Action Plans based on location,
resources, strengths, constraints, policies, and local input (CARB 2014).

[Local governments] have broad influence and, in some cases, exclusive
authority over activities that contribute to significant direct and indirect
greenhouse gas emissions through their planning permitting processes, local
ordinances, outreach and education efforts and municipal operations. Many of
the proposed measures [within the Scoping Plan] to reduce greenhouse gas
emissions rely on local government actions (California Air Resources Board
2008, pg. 26).
Additionally, the 2009 California Climate Adaptation Strategy includes within its key recommendations, that local communities with General Plans and Local Coastal Plans to amend their plans to assess climate change impacts, identify areas most vulnerable to these impacts, and to develop reasonable and rational risk reduction strategies using the California Adaptation Strategy as guidance (California Natural Resources Agency 2009). This presents a precedent setting opportunity for the City of Ventura to integrate climate change and post-peak oil planning strategies into the General Plan update, and fulfill the need for action required by the State and Federal governments. Integrating mitigation and adaptation strategies throughout planning and guiding documents for the municipal built environment will benefit the health and well being of Ventura’s infrastructure and community fabric (Blakely and Carbonell 2012, Beatley 2009, Newman et al 2009, Lerch 2007).

Forward thinking within local government for climate change has become more common, however municipalities who plan for post-peak oil are much less common and therefore considered very advanced. The City of Ventura commissioned a Post-Peak Oil Vision Plan in 2007, indicating that Ventura has been a leader in sustainability planning and environmental consciousness.

Environmental Trends in the City of Ventura

History of Environmentally Responsible Behavior

The City of Ventura has a well-established reputation for environmental activism. Patagonia, an internationally respected business with an environmental activism arm, was founded in Ventura in 1973 and has devoted time and money to environmental efforts locally and internationally, donating 1% of sales or 10% of their profit, whichever is more, to environmental groups every year. Environmental consciousness permeates through to the core of the company with Patagonia’s commitment to environmentally sensitive materials and business practices (Patagonia 2015).
The Nature Conservancy located a California field office in downtown Ventura, focusing on its LA-Ventura Project by working to preserve the Santa Clara River watershed and wildlife corridors (The Nature Conservancy 2015). Additionally, they have assembled a Steering Committee representing diverse Ventura County stakeholders for the Coastal Resilience project focusing on the impacts of climate change in Ventura County (The Nature Conservancy 2015).

The national non-profit Surfrider Foundation has a very active Ventura County chapter, likely due to the high level of surf culture in the City of Ventura. Many of Surfrider’s programs and initiatives are environmentally focused including Rise Above Plastics and Ocean Friendly Gardens (Surfrider Foundation 2015). The Surfer’s Point Managed Retreat project in Ventura is a popular case study for coastal communities adapting to rising sea levels due to climate change, and the Surfrider Foundation was one of the projects’ many key stakeholders.

Local Ventura grassroots non-profit organizations also include Ventura Climate Care Options Organized Locally (VCCOOL). One of the few Ventura County community-based organizations solely focused on climate change, “VCCOOL is dedicated to engaging the people of Ventura to reduce greenhouse gases. We strive to influence policy, provide tools and expertise for lifestyle change, support a localized green economy, and foster a grass-roots community that supports sustainable living” (VCCOOL 2013 n.p.). This mission is primarily achieved through an active transportation program focused on empowering the community to enjoy the environmental and health benefits of low GHG emission, bicycle-based transportation (VCCOOL 2013).

**Previous Resiliency Work in the City of Ventura**

The City of Ventura, as a forward-thinking leader in environmental planning, commissioned Cal Poly Pomona’s 606 Studio to develop a post-peak oil vision plan for the city entitled *Transforming Urban Environments for a Post-Peak Oil Future: A Vision Plan for the City of San Buenaventura* in 2007 (Chen et al 2007). The 606 Studio was an environmental planning and landscape architecture design group within Cal Poly Pomona’s College of
Environmental Design landscape architecture graduate program. The 606 Studio embarked upon an ambitious study to develop an innovative vision plan for a local municipality to plan for the impacts of major resource depletion in a post-peak oil future. An in-depth analysis of current systems and scenario planning, developed a 2050 vision for Ventura was outlined through a series of phased project guidelines.

The 2007 post-peak oil vision plan remains one of the only such plans in the world, positioning Ventura as not only a model city for adaptation, but for having a foundation from which to build community resiliency for being able to withstand and transition into an energy-descent future where resources are managed more efficiently and holistically.

In 2010, a group of graduate students from the Bren School of Environmental Science & Management (Conrardy, Feiger, King, Sobel & Whittet 2010) partnered with AECOM Environment (an international firm of dedicated professionals that work to “create, enhance and sustain the world’s built, natural and social environments” (AECOM 2015 n.p.) to develop a software model to serve as the basis for GHG reduction plans by utilizing a cost-benefit analysis on 20 different GHG reduction strategies such as installing efficient appliances, talking public transportation and installing solar panels. The software is dubbed SAFEGUARD (Strategic Analysis for Environmental GHGs Under AB32 Regulatory Demands) and works to prioritize reduction strategies based on cost effectiveness while allowing the user to override the economic prioritization to address local political feasibility. The software tool is meant for local governments to determine optimal GHG reduction strategies at the community scale. The student team members utilized the City of Ventura as a case study to test the model and SAFEGUARD software. An initial GHG emissions inventory was done based on data from 2007, when a city government operations inventory was also conducted, and was found to be 750,305 metric tonnes of CO₂e. The software model concluded that Ventura might be able to reduce GHG emissions to 80% below 1990 levels with an annual savings of $55,400,000 on $68,000,000 upfront capital
costs (Conrardy et al 2010). The student team produced the Ventura Community Greenhouse Gas Solutions report in 2010 (Conrardy et al 2010).

Mitigation of damage due to shoreline erosion was the major focus of a planned retreat strategy by a multiple agency and stakeholder project at Surfer’s Point in Ventura. Representatives from the City, County Fairgrounds (the property owners adjacent to Surfer’s Point), California Department of Parks and Recreation, the California Coastal Commission, and the Ventura County Chapter of Surfrider Foundation developed a managed retreat approach in 2001 that included:

4. Relocating the bike path and public parking lot more than 60 feet further inland.
5. Removing existing rip rap.
6. Restoring the area to a more natural beach habitat.
7. Continuing to provide adequate parking for beachgoers and the Fairground.
8. Providing for on-going beach renourishment.
9. Preserving public access to the area via Shoreline Drive.
10. Advocating for the removal of the Matilija Dam to increase sand supplies to the beach (NOAA 2007 np).

NOAA (2007) identified reasons why this plan for Surfer’s Point was successful.

Often, the initial response to shoreline erosion is to build a seawall. Because managed retreat has not been a widely employed approach to shoreline management, it has been difficult to convince others that planned retreat might be the best economic and environmental solution for their erosion problems. Adopting a managed retreat policy at Surfer’s Point has been successful because it began at a grassroots level. The Ventura County Chapter of the Surfrider Foundation continuously championed this approach for two decades and highlighted the benefits of the option to the City Council and general public. The project was also successful, because it involved all major players in the planning process. Although the process took time, and was aided by a change in leadership in one agency, a consensus was reached that managed retreat was the best alternative (NOAA 2007 np).

Building on a solid foundation of previous resiliency work, the Ventura community is poised to carry forward the successful development of a post-peak oil and climate change community action plan. Once developed, specifically identified action measures can be integrated into the General Plan and inform the Development Code for the city. This effort has
potential to put the City of Ventura in the best position for resiliency by adapting to future scenarios of climate change, energy and natural resource scarcity.

Summary

The City of Ventura could be poised to become the leader in action planning for post-peak oil and climate change. With a favorable climate and geographic location, the region’s natural resources are able to support a thriving sustainable community if planned and managed from an adaptive capacity building and resilience framework. Future resiliency and action planning are likely to be impacted by the characteristics and resources of city, federal, state, regional, county and municipal planning regulations and actions, and the context of the larger theoretical knowledge base on resiliency and action planning. A continuation and implementation of Smart Growth based General Plans will help maintain the course, already begun, towards resiliency for the City of Ventura. A heightened environmental consciousness within the community will help aid in this continued progression.

There is a growing awareness that all cities need to prepare post-peak oil and climate change resilience plans and strategies to guide them through the regulations and necessary changes needed for community adaptation and long-term resilience (Masterson et al. 2014, Tierney 2014, Calthorpe 2011, Comfort et al. 2010, Beatley 2009, Newman et al. 2009, Newman and Jennings 2008). Every level of government plays an essential role in these strategies, especially the local jurisdiction, and the basis of these plans is the vision of how they will lessen their dependence on oil and lower carbon emissions. Creating a vision, and acknowledging peak oil and climate change, is a critical first step in resilience planning, but it needs to be followed by a plan for implementing change (Newman, Beatley and Boyer 2009).

Planning processes can take time and be difficult to advance from a visioning phase to implementation and action. The factors influencing movement from vision to action merit research at the local community level. For example, a good problem solving planning process
can mobilize an entire community around its own capacity and vision, thus aiding in the success of implementation (Kretzmann and McKnight 1993). However, there are also barriers to implementation of a community action plan that may slow, or even prevent, the concrete actions required to move a community towards adaptation and overall resilience.

The first step is to create a clear plan that incorporates civic engagement through a variety of participatory processes; developing partnerships and a multi-stakeholder approach; political will by elected officials thinking outside the box; political courage; strong leadership and the motivation of a genuine concern about the impacts to the community and future outcomes that go beyond the typical electoral cycle (Newman, Beatley and Boyer 2009).

Moving from visioning to action is vital in order to gain traction and build momentum behind actually building community capacity for adaptation and resiliency. Otherwise, vision plans and good intentions can and will go unimplemented, leaving a community vulnerable and unprepared (Masterson et al. 2014, Tierney 2014, Comfort et al. 2010). The City of Portland has recognized the need for moving beyond vision plans to implement programming and progress reports from over 20 years of climate change and peak oil planning. In 1993, Portland was the first U.S. City to create a local action plan for reducing carbon emissions. Portland’s Climate Action Plan (2009) is a strategy to achieve a 40% reduction in carbon emissions by 2030 and an 80% reduction by 2050 compared to 1990 levels (City of Portland and Multnomah County 2015). With the development of the 2009 Climate Action Plan, the City of Portland initiated an action process that includes annual progress reports that include updates on emission trends, fossil fuel use and progress in implementing the actions identified within the 2009 Climate Action Plan. Overall Climate Action Plan updates are to take place every five years, and include revisions to the actions and to identify new ones. This includes identifying and updating actions that have not yet been implemented but remain effective ways to achieve the objectives of the plan. New actions are to be identified for implementation in the subsequent five years. This update also is to include a revision process of the opportunities and challenges to achieving the 2030 emission
reduction objective (City of Portland and Multnomah County 2015). A Climate Change Preparation Strategy (City of Portland and Multnomah County 2014) was produced as part of the overall action planning effort to serve as a foundation to the climate change preparation-related actions to “(1) reduce climate-related vulnerabilities for residents and businesses, and (2) respond to impacts when they do occur” (City of Portland and Multnomah County 2014, pg. iii).

Additionally, a Risk and Vulnerabilities Assessment (2014) was created to provide an overview of the science and a more detailed reviews of the potential impacts to health and human systems, natural systems, infrastructure and the build environment. This work provides the foundation for the Climate Change Preparation Strategy as it attempts to understand how climate affects the community today, how those effects are expected to change in the coming century, and what can be done to prepare (City of Portland 2014).

Ventura can use Portland’s example of implementation planning to move a proposed action plan into the cities General Plan documents to create real and material change in the city’s resiliency preparedness. Identifying the factors that support, and barriers which prevent implementation of change will aid the City of Ventura in their efforts to go beyond vision planning and implement a successful action plan. For example, actually implementing community vision plans created through civic engagement, builds community trust and buy-in that increases the community capacity to successfully cope with the impacts of post-peak oil and climate change as a coastal community. Therefore, the research in this thesis is vital in learning how to best accomplish change within the City of Ventura.

This research studies the factors influencing, and barriers preventing, the development of concrete action for resiliency in the City of Ventura as of 2015. The City of Ventura is an excellent case study for this thesis because of its environmentally minded community and non-profits; its vulnerable location as a coastal community; and it’s forward thinking local government, policies and existing planning efforts put it in a position to become a world leader for post-peak oil and climate change action. While the City of Ventura has developed excellent
vision plans for resiliency in post-peak oil with *Transforming Urban Environments for a Post-Peak Oil Future: A Vision Plan* (Chen et al 2007); 2005 Ventura General Plan: Achieving the Vision (City of San Buenaventura 2005); and Ventura Vision (City of San Buenaventura and Seize the Future Citizens Outreach Committee 2000), the need for implementation and action is becoming apparent given the need for overall sustainable resource management and due to the City of Ventura’s vulnerability as a coastal community.
CHAPTER 4: RESEARCH METHODS

Overview

This thesis utilized an inductive approach to the research question, "What factors influence the development, creation, adoption and implementation of a post-peak oil and climate change community action plan for the City of Ventura, California?" Two major research methods were chosen for data collection and analysis in a qualitative approach to this question: semi-structured interviews and content/inductive analysis. Qualitative research attempts to understand behavior and institutions by getting to know the persons involved and their values, rituals, beliefs, attitudes and emotions (Frankfort-Nachmias & Nachmias 1996).

Once the semi-structured interview questions had been developed and approved by Cal Poly’s Institutional Review Board (IRB) (Appendix A), interviewees were selected and appointments were made to conduct interviews with members of the Ventura community. Prior to all interviews, all participants signed an Informed Consent Form (Appendix C). All semi-structured interview audio files were transcribed, and then analysis was performed using content/inductive analysis. This method was chosen to effectively identify commonalities of key terms and ideas from the interview responses, resulting in the distillation of key factors that influence the development of a post-peak oil and climate change plan for the City of Ventura.

Ventura was chosen as the site for this research because of its environmentally minded community and non-profits; its vulnerable location as a coastal community; and its forward thinking local government, policies and existing planning efforts put it in a position to become a world leader for post-peak oil and climate change action.
Semi-Structured Interviews

Background

One of the easiest ways of gathering information is simply to ask someone who knows whatever it is you want to know (Jones 1996). An epistemology, that is, a theory of knowledge is generated when data is collected over a relatively prolonged period of time, ideally through direct, face-to-face contact such as qualitative interviews. In general, there are three levels of structure for interviews: structured, semi-structured and unstructured (also called the long interview) (McCracken 1988). The semi-structured interview is a guided conversation whose goal is to elicit from the interviewee rich, detailed materials that can be used in qualitative analysis (Lofland & Lofland 1984).

This goal is achieved by interviewing people who have been in the setting of interest, or who have had the experiences the researcher wants to focus on (Jones 1996). Wack (1985a) asserted that if you wanted an accurate view of the future in scenario planning you could not go to conventional sources of information. Schwartz (1991) stated “you had to seek out truly unusual people who had their finger on the pulse of change, who could see significant but surprising forces for change. These people would be found in very different walks of life, all over the world” (Schwartz 1991, pg. 10). Though these unusual people are important for insights into the future, Wack (1985a) also placed heavy importance on the involvement of the decision makers themselves in scenario planning. “In order to integrate the decision makers directly into the process and to get a deep understanding of what their concerns are, interview techniques were developed to find out what was on their minds and to illuminate the existing decision framework. This interview should be one of the first steps taken when one starts a scenario exercise” (Wack 1985a, pg. 10).

Kvale (1996) outlines the details of seven stages in the complete interviewing process as:

Thematizing: clarifying the purpose of the interviews and the concepts to be explored.
Designing: laying out the process through which you’ll accomplish your purpose, including sampling and a consideration of the ethical dimension.

Interviewing: doing the actual interviews.

Transcribing: creating a written text of the interviews.

Analyzing: determining the meaning of gathered materials in relation to the purpose of the study.

Verifying: checking the reliability and validity of the materials.

Reporting: telling others what you’ve learned (Kvale 1996, pg. 88).

Once the theory question has been thematized, and the interview questions and general structure of the interview is designed and written, the researcher must select a group of people, or sample, to interview. The selection of respondents is largely determined by the nature of the study and the characteristics of the population (Frankfort-Nachmias & Nachmias 1996). The response rate for specifically selected participants is usually higher than it is for participants selected at random because members of these groups are more likely to be interested in or familiar with the topic under investigation, to identify with the goals of the study, and to be more motivated to participate (Frankfort-Nachmias & Nachmias 1996).

Although the interviewer may set out to conduct interviews with a predetermined set of questions addressing the overall topic, the flexible nature of semi-structured interviews requires careful listening, framing of new questions to dig deeper into a response, and subtly directing the flow of conversation making it relevant to the inquiry (Babbie 2001). To be successful at creating and conducting semi-structured interviews, the interviewer must be able to control a ‘guided conversation’.

As the interviewer guiding the conversation, it is essential to listen more than talk in order to help the interviewee feel relaxed and show interest. In allowing the interviewee to feel comfortable and converse freely, the researcher assumes the role of ‘socially acceptable incompetent’ while conducting the interview, as suggested by Lofland and Lofland (1984), and is therefore more likely to be accepted. It is important to assume the role of socially acceptable incompetent, or of watcher and asker of questions in the quintessential student role. “A naturalistic investigator, almost by definition, is one who does not understand. He or she is
‘ignorant’ and needs to be ‘taught’” (Lofland & Lofland 1984, pg. 38). By offering yourself as someone who is learning and does not fully understand the problem being researched, the interviewee feels comfortable and compelled to help the interviewer grasp even the most basic and obvious aspects of the problem. This puts the interviewer in a good position to keep the flow of information continuing smoothly (Babbie 2001, Lofland & Lofland 1984).

There is a strong consensus among researchers who perform qualitative interviews that recording and transcribing are essential (Jones 1996, Lofland & Lofland 1984). Although transcription is an area of post-interview necessity, people fail to realize the significant amount of time it consumes. Although time consuming, it creates a full and permanent record of the respondents’ words for analysis and re-analysis as needed. In addition to producing an accurate record of the interview, recording the interview releases the interviewer from the need to take notes and thus makes it easier to attend to what the respondent is saying (Jones 1996, Lofland & Lofland 1984).

Lofland and Lofland (1984) outline what they see as a written record of the interview, ultimately, as an amalgamation of the following:

1. Summaries and notes of what the informant said generally at some point.
2. Verbatim transcription of responses that seem important at the point of the write-up.
3. Ideas: little, tentative pieces of analysis.
4. Methodological difficulties or successes.

Semi-structured interviews allow the interviewer to verify the accuracy and reliability of information that the questions may elicit throughout the interview. They also create opportunities for the interviewer to ask respondents to check the accuracy of the transcripts, if desired. Verification aids in more accurate data analysis as the researcher outlines the results through the findings in their report.

A review of several studies in the fields of landscape and environmental planning indicates that semi-structured interviews are frequently used for ascertaining visual preferences,

Semi-Structured Interviews: Strengths

The benefits of audio recording interviews allow the interviewer to be fully present while conducting the interview rather than being solely focused on taking notes verbatim. Accurate transcriptions can be made from audio recordings. The ‘do-it-yourself’ transcriber requires study of each interview piece-by-piece and stimulates analysis, versus having someone else do the transcriptions (Lofland & Lofland 1984).

*Semi-Structured Interviews: Strengths*

The main strength of semi-structured interviews as a method is that it allows the researcher to access specific knowledge about the research topic from the perspective of the participants (Lofland & Lofland 1984). The use of semi-structured interviews as a research method in similar fields of study, has proven successful in developing richer and more detailed findings. For example, in Connelly Markey and Roseland (2009) a case study examining the gap in understanding common barriers associated with the planning process in sustainable community development provided insight through the method of semi-structured interviews with key stakeholders, on the decision-making processes involved in moving from sustainable community planning to implementation (Connelly et al. 2009). The use of this method enabled the identification of specific barriers from the point of view of key stakeholders and offered strategies to overcome them.

Another strength of semi-structured interviews is community specific knowledge such as in Ford, Pearce, Smit and Wandel (2007) where a study of the reduction of vulnerability to climate change in the Canadian Arctic also utilized semi-structured interviews with a wide cross section of community members. This method aided in achieving the study goals by identifying vulnerability to community specific conditions and therefore characterized specific factors that
shaped community vulnerability and how they changed over time. This allowed identification of entry points for adaptation policy (Ford et al 2007).

A further strength of semi-structured interviews as a research method is the ability it affords the researcher for development of a direct relationship with the subjects through personal contact. This includes the physical ability to meet and get to know the sample population. It allows for a higher level of personability and offers the ability to observe other subtleties such as body language, verbal tone, and other emotions in the respondents’ responses (Neuendorf 2002, Lofland & Lofland 1984).

**Semi-Structured Interviews: Weaknesses**

The first hurdle to overcome in utilizing semi-structured interviews is getting respondents to agree to be interviewed and to actually follow through with meeting (Babbie 2001, Lofland & Lofland 1984). Once the interview has begun, the researcher must be careful not engage too much in conversation with interviewees and subconsciously alter their answers with personal bias (Babbie 2001).

The process of note taking during the interview decreases the interviewer’s capacity (Lofland & Lofland 1984). It is very important and highly recommended that the interview be audio recorded instead of taking notes by hand, as that can take attention away from asking prompting questions, thus slowing down the interview and ultimately making the interviewee uncomfortable. Although audio recording is theoretically documenting everything being said, it is still important to listen and be attentive. The best remedy for this is to take sparse notes – key sentences, key words, key names, etc. – in order to stay on top of what is going on in the interview (Lofland & Lofland 1984). Verbatim notes must then be transcribed. The time consuming nature of transcribing interview audio files is by far the most dominant weakness of this method (Babbie 2001, Lofland & Lofland 1984). Having the financial ability to hire a transcriber facilitates this process but is expensive, and conversely, engaging in the process of transcription allows the researcher to thoroughly understand and analyze the interview data.
For this research, each weakness was addressed based upon its unique nature. For example, in getting respondents to agree and follow through with an interview, I became a part of the local community by working for the local government, where I developed internal contacts and relationships. People began to contact me to participate. To be fully attentive and not derail an interviewee’s response by engaging too much in biased conversation or detailed note taking, a digital recording device was used. This also aided tremendously in the transcription process. I personally transcribed the interviews, thus allowing a greater engagement with the data.

*Semi-Structured Interviews: Data Collection*

The semi-structured interview questions were developed to prompt specific dialog around identifying specific factors which influence the development of a post-peak oil and climate change plan for the City of Ventura (see Appendix C for the list of questions), including factors influencing and barriers to development, and strategies to approaching the community in altering their lifestyle and behavior patterns to be more sustainable.

Participants were selected as a non-random sample, meaning that they were chosen based upon specific criteria established by the researcher, rather than participants’ chosen at random (Babbie 2001). The identified criteria were as follows: decision makers; experts; high level of commitment; and willingness to participate. Participation and decision making ability at the municipal level was the main dimension for the chosen group because that was an area identified with the most capacity to influence the development of an action plan for the City of Ventura. Areas of work and experience used to identify potential participants were derived from a review of existing national and international peak oil and climate change action plans. Existing plans showed commonalities in the following focus areas: government, environment, economic, agriculture, built environment, transportation, community development, education, energy, local experts and organizations. Therefore, members of the Ventura community, who had a high level of participation and commitment to decision making, were identified as representatives from these focus areas to participate in the interview process.
Research was conducted on potential participants and their contact information was acquired. Initially, forty-five people were identified across the focus areas. This number was eventually decreased to thirty-four. Due to difficulty in acquiring contact information, thirty were emailed a letter (see Appendix B) inviting them to contribute to the study by taking part in a semi-structured interview ranging from twenty to thirty minutes. In the end, fifteen (15) people were interviewed, thirteen (13) from the original list and two (2) who were recruited through a process of snowball sampling. Snowball sampling is a nonprobability sampling method where individuals within the research population provide the information needed to locate other members of that population whom they happen to know (Babbie 2001). “Snowball [sampling] refers to the process of accumulation as each located subject suggests other subjects” (Babbie 2001, pg. 180). Subsequent interviewees were added through suggestions of the participants as they were interviewed and gained a better understanding of the scope of the research. Therefore, this study used a combination of directed sampling and snowball sampling to identify interview respondents.

Semi-structured interviews were conducted with fifteen (15) participants in the Ventura community to produce qualitative data. Participants chosen consisted of a heterogeneous group, from high-ranking officials to community citizens. These interviews ranged from twenty-three minutes to fifty-six minutes in length and were audio recorded upon verbal and/or written consent from the respondents.

In July 2010, all fifteen (15) semi-structured interviews were conducted at various locations around the City of Ventura, including City Hall, private homes, offices and participants’ places of employment. Immediately upon completion of the interviews, a list of primary and common factors derived from the interviews were recalled by the interviewer and brainstormed (see Appendix G). This list aided in developing a holistic understanding of the data from the semi-structured interview process.
All interview audio files were transcribed under coded respondent numbers to ensure respondents were de-identified. Any identifying information in the body of the interviews was also removed. Transcription of the fifteen (15) interviews took several months. From these transcription files, a content/inductive analysis was performed.

**Content and Inductive Analysis**

**Background**

Content analysis is the study of recorded human communications and falls within the field of unobtrusive research, also known as non-reactive research (Frankfort-Nachmias & Nachmias 1996), which is a method of studying social behavior without affecting it (Babbie 2001). Non-reactive research includes any method of data collection or analysis that removes the researcher from the interactions, events, or behavior being investigated (Frankfort-Nachmias & Nachmias 1996). An “example of unobtrusive research is content analysis, which involves the study of recorded communications – anything from books, speeches, and poems to paintings, songs, and TV commercials” (Babbie, 2001 pg. 9). Content analysis is considered to be among the most unobtrusive, non-reactive methods available (Jones 1996).

Content analysis is a quantitative research method defined, in brief, as the systematic assignment of content of any form of communication to categories according to rules, and additionally the analysis of relationships involving those categories using statistical methods (Riffe, Lacy & Fico 2005). Content analysis can convert qualitative information to quantitative data for further analysis. Riffe et al (2005), offers a more specific definition based upon the research of previous authors in the field of communication:

> Quantitative content analysis is the systematic and replicable examination of symbols of communication, which have been assigned numeric values according to valid measurement rules and the analysis of relationships involving those values using statistical methods, to describe the communication, draw inferences about its meaning, or infer from the communication to its context, both of production and consumption (Riffe et al. 2005, pg. 25).
This approach was best applied to converting the responses to the semi-structured interview questions into quantitative values for analysis.

The appearance or nonappearance of attributes in messages has been described as qualitative content analysis and it has been recommended to use both quantitative and qualitative methods to support each other (Riffe et al. 2005). Specific content can and does have multiple meanings or may be interpreted differently by the researcher conducting the content analysis.

Similar to content analysis, inductive analysis is a form of content analysis driven by the data itself while amalgamating it into manageable pieces for analysis (Lofland, Snow, Anderson, & Lofland 2006). In typical prescribed content analysis, a deductive approach is taken where the analysis of the content is driven by a predetermined set of categories, criteria or initial hypothesis (Lofland et al. 2006, Neuendorf 2002). Whereas in inductive analysis, categories are informed and determined by the outcomes of the analysis through identifying patterns, themes, and interrelationships among the data (Patton 2002).

“It is inductive in that it primarily begins with observations, and it is analytic because it goes beyond description to find patterns and relationships among variables.” (Babbie 2001, p. 313). This inductive approach requires a close connection between the data and the researcher resulting in a creative process of coding and grouping that cannot be concisely defined by prescribed steps or predetermined by theoretical assumptions (Lofland et al. 2006, Patton 2002). It is the researcher who is most immersed in the data that applies a uniquely creative and analytic approach in arriving at interpretations and conclusions (Lofland et al. 2006, Patton 2002).

Coding and grouping are the key components within an inductive content analysis in which qualitative data is converted into quantitative data. Coding is the process of transforming raw data into a standardized form while identifying individual ideas (Lofland et al. 2006, Babbie 2001). An inductive analysis involves an initial coding approach where skimming the material produces preliminary collections of data groups. A secondary and more focused coding step further develops the subject matter by grouping initial codes into themes (Lofland et al. 2006).
One method in organizing these focused groups is to map coded items into columnar, branched, or network structure diagrams as themes that reveal the relationships among the data (Lofland et al 2006).

The use of content analysis as a research method in studies of climate change and peak oil have helped broaden the scope of understanding solutions towards more effective processes. For example, the use of content analysis of thirty city climate action plans in Boswell, Greve & Seale (2010) identifies elements and assumptions in emissions inventories that have important policy implications for climate action plan formulation, and helped identify seventy different factors where plans generally do a poor job of linking mitigation actions to reduction targets (Boswell et al 2010). It is an advantage that this form of analysis allows insights to be drawn from large amounts of diverse data.

A successful example of combining the methodologies of semi-structured interviews and content analysis is evident in Urwin & Jordan’s (2008) study adopting both a top-down and a bottom-up perspective to explore how far different sub-elements of policies within the agriculture, nature conservation and water sectors support or undermine potential adaptive responses to climate change. The combination of content analysis of policy documents with interviews of policy makers was utilized as the main forms of data collection from the top-down approach, which assumed that policies set explicit aims and objectives that were directly translated into action on the ground. This approach allowed new insights from existing or common knowledge, and permitted the use of these two research methods to conclude that neither the top-down or the bottom-up approach offered a complete picture of the potentially enabling or constraining effects of different policies on future adaptive planning, but rather together offered new perspectives on climate policy integration (Urwin & Jordan 2008).

Content and Inductive Analysis: Strengths

There are many benefits to content analysis as an analysis method. First, it is a non-obtrusive, non-reactive measurement technique that can be conducted anytime on any source of
data that is unlikely to have any effect on the study subjects (Babbie 2001). The initial and focused coding involved in inductive content analysis, does not require specialized training to conduct and can be performed without the need for distinctive equipment (Babbie 2001).

Although the data retains its meaningful distinction, quantification or measurement by coding permits reduction of a large amount of data to understandable levels that might be logistically impossible for close qualitative analysis. For example, Boswell et al (2010) analyzed massive amounts of qualitative data in thirty climate action plans that resulted in seventy different quantitative data-points as factors.

Content analysis’ most versatile strength is that it is virtually unlimited in its applicability to a variety of questions important to many fields because of the centrality of communication in human affairs, thus allowing it to fit well with other research methods in triangulation (Riffe et al 2005, Patton 2002).

Inductive analysis allows the retention of the ‘character’ of responses from interviewees while providing the flexibility to simplify data to manageable levels, making it superlative for this study (Lofland et al 2006). The coding techniques used in inductive analysis are ideal for identifying and analyzing ideas, patterns and themes in transcripts from semi-structured interviews, and converting qualitative information to quantitative data for further comparison and interpretation. The codes and themes are driven by the data itself, not by an imposed series of theoretical constructs (Patton 2002).

**Content and Inductive Analysis: Weaknesses**

Critics of content analysis claim that the method puts too much emphasis on a comparative frequency of different symbols or ‘codes’ (Lofland et al 2006). Preparing conceptual definitions through initial and focused coding is a labor intensive and time consuming process, yet is incredibly important since the quality of the studies outcomes are based upon this procedure (Lofland et al 2006). Researchers need to be careful of the changing nature of symbols when designing content analysis research. Language users share meaning, but they also can have
idiosyncratic variations of meanings for common symbols causing potential misclassification of observed codes (Riffe et al 2005, Babbie 2001).

Riffe et al (2005) states that quantitative content analysis has a distinction between manifest and latent content. Manifest content is considered to be the obvious verbal message given by the interviewee. Latent content by contrast is the hidden or sub-verbal content seen in tone of voice, expressions and inside references. Latent content may affect the meaning of manifest content. The distinction between latent and manifest has clear implications for accurate content analysis where there is potential for multiple coders applying rules to categorize reliably some communication content (Riffe et al 2005). Riffe et al. (2005) further poses the question of how reliable can the data be if the content is analyzed at a level that implicitly involves individual interpretations (Riffe et al 2005)? They further go on to state that “the requirements of scientific objectivity dictate that coding be restricted to manifest content; the luxury of latent meaning analysis comes at the interpretative stage, not at the point of coding” (Riffe et al 2005, pg. 38).

Content analysis and inductive analysis is time consuming and requires focused attention over a period of time (Lofland et al 2006). Initial coding and classification may shift and change as the coding and grouping progresses, resulting in a deeper understanding of conceptual relationships in the data.

**Content and Inductive Analysis: Data Analysis**

Initial analytic findings were documented immediately after all interviews as a reflective analysis, completed by abstracting interview field notes and linking concepts into concrete ideas relevant to the semi-structured interview questions (Emerson, Fret & Shaw 1995).

After completion of all the interviews and their transcription, content/inductive analysis was utilized on transcripts of the semi-structured interviews to identify key themes and to discover specific factors of influence and barriers to the development and adoption of a post-peak oil and climate change community action plan for the City of Ventura. Written transcripts were analyzed and based upon responses to the semi-structured questions, key terms and ideas were
transferred to post-it notes. Within the case of this thesis, content analysis highlighted a response from a specific question that could be interpreted to more accurately answer a different question for the analysis. Therefore, all questions were analyzed from each interviewee first for factors influencing and secondly barriers preventing the creation and adoption of a post-peak oil and climate change action plan. While the semi-structured interview questions were useful in eliciting information, they did not provide a useful framework for the larger analysis of the study. However, in the interest of later analysis each post-it note was coded with the interview audio file number and the interview question it was in response to.

There is no way around the time consuming and laborious nature inherent to content/inductive analysis and coding. A pilot analysis was attempted with two coders coding the data, but it quickly became clear that an intimate understanding of the data, deriving from the interview and transcription process was needed. Therefore, to avoid any misinterpretations of meanings and symbols used to code the content, only one coder conducted the analysis, thus providing a unilateral and reliable approach. However, the thesis advisor checked those codes, and grouping or networking the codes was done as a collaborative process between the two researchers.

Once all transcripts were analyzed, content codes were transferred into a template for printing labels that were then applied to post-it notes. The post-it notes were grouped into different categories of commonality to acquire overarching themes through a cluster analysis (see photo below). Each category or theme was given a descriptive name that represented the group. Groupings were considered over a period of weeks in order to create a more in-depth understanding of the interrelationships between the responses based on the two overarching themes of barriers to and factors supporting the creation and adoption of a post-peak oil and climate change action plan for the City of Ventura.
Each category or theme turned out to be based in the context of issues versus a more scale-based model. In other words, instead of the factors supporting and the barriers to a post-peak oil and climate change action plan being laid out within the scale-based categories of state, region, city, community or individual, they organically oriented themselves towards categories of issues such as economic, resources, planning, belief & awareness, etc. Post-its within each group where then transcribed into a large table where a dendritic or tree-type flow chart was developed while working backward from the actual transcribed quote to relating the overarching categories or themes together. A sample of this chart is seen on the following page.
<table>
<thead>
<tr>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
<th>Tier 4</th>
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<tbody>
<tr>
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</tbody>
</table>

Table 3: Education Awareness Barrier Cluster

The key terms and ideas derived from the analysis were then quantified into a data process matrix. This matrix shows how many key terms/ideas were expressed (see Table #3 and Table #4). The primary researcher performed the coding; however, the thesis advisor checked the codes. This allowed a quantitative analysis of the number and concentration of each Tier 1 category based on comments from the semi-structured interviews. A sample of this matrix is shown on the following page.
<table>
<thead>
<tr>
<th>Tier 1</th>
<th>By Interview</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Awareness</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Issue: Beliefs &amp; Awareness</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Complexity</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Politics</td>
<td></td>
<td>16</td>
</tr>
</tbody>
</table>

Table 4: Sample of Tier 1 Barriers with Qualitative Interview Analysis
Finally, the coded and grouped categories were analyzed in light of the theoretical models examined in the literature review and referenced within the model developed by this thesis study.

Conclusion

The combination of semi-structured interview data collection from a selected sample of expert stakeholders and analytic induction content analysis resulted in an understandable if complex delineation of the data and allowed for a thorough analysis of the barriers and supporting factors for the implementation of a post-peak oil and climate change resiliency plan. This analysis works to provide insight into how to address perceived gaps in the planning process specific to the City of Ventura.
CHAPTER 5: RESULTS & ANALYSIS

Introduction

In initial correspondence with representatives of the City of Ventura, discussions revolved around why the Post-Peak Oil Vision Plan (Chen et al 2007) had not gained much traction towards implementation, and remained on a bookshelf collecting dust. Research indicated that there was little academic literature or empirical research on how to move from a vision into action and actual implementation of a post-peak oil and climate change plan.

Practical experience of climate adaptation through local planning has a relatively short history in the adaptation literature. Thus it is not surprising that in the climate change [and peak oil] literature, the constraints on local adaptation planning have tended to be conceptualized in a relatively straight-forward, mechanical way, emphasizing the importance of inadequate information, institutional limitations, lack of resources and a culture of reactive management (Measham et al 2011, pg. 893)

With “factors thus far [being] under-acknowledged in the climate adaptation literature” (Measham et al. 2011, pg. 889), we came to the conclusion that focusing on factors of influence would be of the most benefit for the City of Ventura (and other communities facing the creation, adoption and implementation of community action plans) by creating the foundational leg-work and inventory of the community assets, both negative and positive, needed to move forward in the planning and implementation process.

The semi-structured interview questions were developed in order to engage the interviewees in the concept of post-peak oil and climate change and the factors supporting/barriers preventing the implementation of a plan, while prompting them to consider what the benefits and disadvantages there might be for the creation, adoption and implementation of a post-peak oil and climate change community action plan. This included questions regarding their opinions on the overall importance (or lack thereof) of the City of Ventura preparing for post-peak oil and climate change, as well as how to engage the community to facilitate overall involvement, and also how best to support the community as a whole in altering their lifestyle and
behavioral patterns to better facilitate sustainability in a post-peak oil and climate changed future. Questions were also asked to prompt conversation in regards to what, where and to what level of concern the implications of peak oil and climate change resonated for the Ventura area.

**Interviews**

Content analysis was conducted on a final sample of fifteen (15) semi-structured interview transcripts. Of the fifteen (15) interviewees, eight (8) were government staff, five (5) government officials, or decision makers, and two (2) were local experts who worked for local non-government agencies.

![Figure 7: Job Categories and Number of Interviewees](image-url)
Four (4) of interviewees were female, while eleven (11) of interviewees were male.

![Figure 8: Gender of Interviewees](image)

Interviews were initially scheduled to be thirty-minutes in length, but ranged between 23 minutes and just over an hour (62 minutes).

![Figure 9: Length of Interviews](image)
Interview transcripts ranged between 4 pages (1179 words) and 10 pages (5729 words) in length.

Figure 10: Length of Transcript Pages

Figure 11: Length of Transcript Words
Interview locations varied within the City of Ventura and took place mainly in the office or house location of the interviewee.

<table>
<thead>
<tr>
<th>Interview</th>
<th>Interviewee</th>
<th>Gender</th>
<th>Interview Length</th>
<th>Transcript Length</th>
<th>Location of Interview</th>
<th>Interview Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Govn’t Staff</td>
<td>M</td>
<td>33 minutes</td>
<td>4 pages 1179 words</td>
<td>Office</td>
<td>7/21/2010</td>
</tr>
<tr>
<td>B</td>
<td>Govn’t Official</td>
<td>M</td>
<td>35 minutes</td>
<td>4 pages 2077 words</td>
<td>Office</td>
<td>7/22/2010</td>
</tr>
<tr>
<td>C</td>
<td>Govn’t Staff</td>
<td>M</td>
<td>54 minutes</td>
<td>6 pages 3198 words</td>
<td>Office</td>
<td>7/26/2010</td>
</tr>
<tr>
<td>D</td>
<td>Govn’t Staff</td>
<td>M</td>
<td>57 minutes</td>
<td>7 pages 3449 words</td>
<td>Office</td>
<td>7/26/2010</td>
</tr>
<tr>
<td>E</td>
<td>Govn’t Staff</td>
<td>M</td>
<td>46 minutes</td>
<td>10 pages 5729 words</td>
<td>Office</td>
<td>7/26/2010</td>
</tr>
<tr>
<td>F</td>
<td>Govn’t Staff</td>
<td>F</td>
<td>45 minutes</td>
<td>5 pages 2518 words</td>
<td>Office</td>
<td>7/26/2010</td>
</tr>
<tr>
<td>G</td>
<td>Govn’t Staff</td>
<td>F</td>
<td>48 minutes</td>
<td>9 pages 5041 words</td>
<td>Office</td>
<td>7/27/2010</td>
</tr>
<tr>
<td>H</td>
<td>Govn’t Official</td>
<td>F</td>
<td>38 minutes</td>
<td>6 pages 3476 words</td>
<td>Office</td>
<td>7/28/2010</td>
</tr>
<tr>
<td>I</td>
<td>Local Expert</td>
<td>M</td>
<td>55 minutes</td>
<td>8 pages 4342 words</td>
<td>Home</td>
<td>7/28/2010</td>
</tr>
<tr>
<td>J</td>
<td>Govn’t Official</td>
<td>M</td>
<td>40 minutes</td>
<td>7 pages 4078 words</td>
<td>Office</td>
<td>7/29/2010</td>
</tr>
<tr>
<td>K</td>
<td>Govn’t Official</td>
<td>F</td>
<td>62 minutes</td>
<td>8 pages 4872 words</td>
<td>Office</td>
<td>7/29/2010</td>
</tr>
<tr>
<td>L</td>
<td>Govn’t Official</td>
<td>M</td>
<td>45 minutes</td>
<td>5 pages 2397 words</td>
<td>Office</td>
<td>7/29/2010</td>
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<tr>
<td>M</td>
<td>Govn’t Staff</td>
<td>M</td>
<td>39 minutes</td>
<td>7 pages 4034 words</td>
<td>Office</td>
<td>7/29/2010</td>
</tr>
<tr>
<td>N</td>
<td>Govn’t Official</td>
<td>M</td>
<td>23 minutes</td>
<td>5 pages 2859 words</td>
<td>Office</td>
<td>7/29/2010</td>
</tr>
<tr>
<td>O</td>
<td>Local Expert</td>
<td>M</td>
<td>45 minutes</td>
<td>7 pages 4020 words</td>
<td>Office</td>
<td>7/30/2010</td>
</tr>
</tbody>
</table>

Table 5: Semi-Structured Interview Data Overview & Interviewee Demographics
General Outcomes and Interview Responses

Immediately after each interview, the interviewer wrote field notes about the interview. These field notes were later reread and analyzed for general trends and issues of the factors and barriers. In addition, further rigorous analysis was also performed using content analysis/analytic induction.

Some of the primary things heard within the semi-structured interviews included:

*Planning for, and acting on the implications of post-peak oil and climate change for the Ventura area is very important and vital in most cases.*

Nearly every interviewee stated that they felt it was important to plan for the potential impacts of post-peak oil and climate change. Some elaborated upon how important it is based upon the area's historical relationship with oil production and its potential economic impacts.

…the City of Ventura’s history and its economy has been based upon a couple of things: agriculture and BIG oil. There are a lot of old oilmen still in town. A lot of oil industry still out in the west side. They are getting even better at productivity and increasing their yields…it is a pretty significant part of the economy (Interviewee H 2010).

It is unclear as to the exact motivation behind this type of a response. Is planning for post-peak oil and climate change important because a loss of economic revenue in the area could be harmful to the community and planning would help aid a smooth economic transition, or does it mean that planning for resilience would inherently pit the local oil industry against such a plan politically and economically and therefore make it difficult to gain full community-wide support?

I think that would really go a long ways towards increasing confidence that it’s just not some kind of show or exercise. So having a greater verification sensibility; understanding where we are at relative to either other areas of the country or the county or the world. Knowing what we have to loose and what we have to gain: where we are. …if you don’t know where you are how can you know where you are going? Even if the assumptions of climate change are off and unlimited resources of oil are found, would such a plan still make sense? I think, yes. (Interviewee I 2010)?

Many respondents understood the collateral benefits of decreasing the City of Ventura’s vulnerability to post-peak oil and climate change while simultaneously providing value to the
community by increasing resiliency and social capacity to withstand the effects that it could bring.

*Community participation processes are an essential component to the success of a post-peak oil and climate change community action plan for the City of Ventura.*

Civic engagement and community participation emerged from the interviews as a very important component to the success of an action plan for post-peak oil and climate change. Both civic engagement and community participation were seen as particularly important in ensuring the needs of the community are met, and that any plans would fit its unique character and sense of place.

If there is one thing that I could put forth is that it desperately needs a civic engagement process that is specifically tailored for the City of Ventura (Interviewee D 2010).

I think that [community engagement] is the only possibility for success. I think it is vital and I think the focus should be on young people (Interviewee F 2010).

Now it’s time to reengage them [public] again and try to do it in a different way. Get them to understand…draw their direct correlation…between that General Plan that they bought into, and the aspects of that General Plan that basically post-peak oil talks about (Interviewee J 2010).

We did find that the sense of community and ownership of the community…people in Ventura are really engaged and interested (Interviewee G 2010).

It was noted and highlighted that the City of Ventura is a progressive community for the most part, which also coincides with a highly participatory community. In the development of *Ventura Vision* (City of San Buenaventura and Seize the Future Citizens Outreach Committee 2000), a number of years was spent conducting civic engagement to gain the most accurate account of what the community looked like and how they wanted to see their city grow. In contrast, the *Post-Peak Oil Vision Plan* (Chen et al 2007) had very little public participation into what the authors envisioned for a post-peak oil future. Therefore, a new civic engagement process is necessary to move forward with a post-peak oil and climate change community action plan that will also secure its success in
implementation through public buy-in and a sense of ownership for the community at-large.

*Though important, a new plan is not necessarily what is needed. The community needs energizing and engaging on these issues, not merely more plans.*

The interviews indicated there was an identified belief that all the planning required to create a community action plan for post-peak oil and climate change has already been done and instead of new planning, what is required is to sift through and highlight components of pre-existing plans that are relevant and collate them into a community action plan.

…there may not be a need for post-peak oil planning per say, but if we just take the guidelines [that] would emphasis about equity and efficiency and cleanliness, and then take a look at all the aspects that are extant in our current plans that call for those kinds of practices…string them all together and *there’s* the plan. Take a planning highlighter and each element in the existing plans that you find and you can highlight that screams at you and you pull it over into all-star post-peak oil and climate change plan… I think we’ve already planned it. And then go the next step and take a look at all the practices and implementation currently under way, and then look at how that matches up to our plans…it would show where the significant gaps are. All the other plans would be informed by those findings and advisements. And use a common set of analysis or metrics. In that way it would be integrated instead of isolated and I think that is why so many plans have ended up on the shelf because they just exist in and of themselves (Interviewee I 2010).

If, in fact, all of the components of a post-peak oil and climate change community action plan already exist within current city plans, that would certainly help increase the confidence of the community members who participated in previous civic engagement processes, while building social capacity in the city. If plans continue to be created and no feedback loops are developed that update the community on their progress, many may feel that their time has been wasted, that there is little accountability for past work, and that there is no commitment within the local government to carry forward those plans.

…address the saturation fatigue of planning for the planning, for the planning, plans. Because it seemingly is losing traction you know… And as a person that has participated in a number of those iterations, part of my disillusionment is how seemingly little energy there is to hold that accountable and to maintain it’s currency, …the best thing we could do is not make a plan because that might take away focus from accountability. Now to call it an *accountability plan*, then I would start to be interested. (Interviewee I 2010).
Conducting an inventory of existing plans relative to post-peak oil and climate change would help to identify further factors that support the development and implementation of those components, especially if credit can be awarded for building overall resiliency in the City of Ventura.

*Available funds are one of the biggest factors in planning and implementation, and the City of Ventura has very limited resources in that department.*

Available funding is an overarching theme interviewees identified when describing potential barriers. A municipalities budget for long-range planning topics like post-peak oil and climate change can be difficult to prioritize when funds need to be used for infrastructure projects such as paving streets and maintaining fire stations.

I mean, we’ve got to balance the budget, we’ve got to hold things together, we’ve got to do more or less the same amount of work with fewer resources (Interviewee M 2010).

Interestingly, this interviewee believes that all the solutions for a sustainable future in the face of post-peak oil and climate change are all within our grasp, it is just funding that is standing in the way.

Figuring out how to pay for it. That is the single biggest one. It would not be too hard to figure out all the things we should do. Figuring out how to pay for all those things, many of which would be very expensive, would be hard. A lot of it is very expensive capital costs (Interviewee N 2010).

But if it’s in writing and it’s policy adopted by the council it’s…now we gotta do it. And sometimes its more expensive and if we are doing a public works project….if each individual project costs more because we have to implement this stuff on each one then we do less projects. You know, we do fewer improvements in the community because each one costs more (Interviewee E 2010).

Each project that incorporated guidelines and principles for building capacity to adapt to post-peak oil and climate change would be a much better long-term investment for the city of Ventura. Despite the added expense, the return on investment in terms of long-term resiliency and lowering of the overall community’s vulnerability to the impacts of post-peak oil and climate change would be worth it.
…ideally the general plan will set the stage to go do all that and if we had tons of money, we would be done…and unfortunately we don’t have tons of money. So we’re just limping along one step at a time and…that’s really been the difficulty of trying to do it right (Interviewee E 2010).

Depending on what you’re implementation goals and objectives are, or depending on what it is that you want to implement, could require some money. Money would definitely be a barrier. Take some of this climate change concept and say, ok, now you (local governments) have to adopt policies to be able to implement this. …policy folk who are just looking at planning and policy without looking at fiscal impact and economic impact…you are going to get a mess on your hands. Now, I think that that is where we are now and we are trying to reach some sort of balance (Interviewee D 2010).

If long-range planning is already being done, guidelines and principles for post-peak oil and climate change community action planning can easily be integrated without much of an economic impact or burden.

Municipalities are frequently highly constrained in terms of their financial capacity due, in part, to their wide range of demands from aesthetics to infrastructure, from waste management, parking, keeping fire stations and libraries open (Measham et al 2011). Lack of resources has been linked to a reactive approach to management of facilities and infrastructure which inhibits effective life-cycle planning and thus, “resource constraints can lead to self-perpetuating short-term technical fixes rather than long-term integrated approaches to addressing problems” (Measham et al. 2011, pg. 894).

Within local government, all decisions including post-peak oil and climate change adaptation are affected by political interests and competing preferences.

Allocating adequate resources and setting goals is strongly tied to the platforms of elected officials, which means that the support, or lack of it, from political leaders can enable or stifle [post-peak oil and] climate adaptation at the local scale. Where local leaders considered climate change to be a pressing issue, resources were available and information needs were addressed. Above all, support from senior leaders is necessary to develop a coordinated approach to climate adaptation through implementing relevant tools and processes across internal divisions (Measham et al. 2011, pg. 906).

Clearly, financial resources for resiliency planning are closely linked to supportive political leaders. The City of Ventura and its potential success for post-peak oil and climate change
community action planning is closely linked to the need for and existence of a political champion within City Hall.

_The planning and implementation process requires as much of a bottom-up as it does a top-down approach towards planning and the implementation of on-the-ground solutions._

Interviewee statements included perspectives on the importance for an integrated approach to planning with balanced bottom-up and top-down approaches to the planning and implementation for post-peak oil and climate action:

…it needs to come up from the community up to meet that priority from city hall. If it’s driven by city hall down, it’s the same classic here you go, pie-in-the-sky, great planning, utopian, here you go, this that and the other. The community needs to look back and recognize that they had buy-in on the visioning document, they had buy-in on the General Plan document, and this is just breaking some aspects of that out (Interviewee J 2010).

This quote further supports the contention that there are existing elements within the current planning documents that reflect principles of community action planning, and that the community has previously bought in on those plans, their contents and direction. A post-peak oil and climate change community action plan can simply be integrated into current planning and policy documents for the City of Ventura.

Bottom up/grassroots approach, has so much strength behind that. Some people aren’t going to be motivated to change until you make it a law basically (Interviewee C 2010).

Really allowing bottom-up input into the process and making sure you are crafting policy [in alignment with that input] (Interviewee O 2010).

…political support comes from community support. So if the council believes that the community thinks it’s a good idea then you know they somehow magically agree with that. I think we have some community support that they can rely on…the council is more engaged if their constituents are engaged. We probably have a better chance of doing it because we are all working together in some way (Interviewee E 2010).

Both local government commitment and community activism is necessary to proceed in integrating resiliency and adaptation components into community plans and action:

If you have active citizens and a council who doesn’t care, then it kind of falls on deaf ears. If you have a council that cares but people that don’t care, then people
don’t buy into it and it can’t necessarily be effective if you [try to] implement it, so I think it takes all those things coming together (Interviewee A 2010).

A Transition Initiative approach that incorporates a bottom-up/top-down approach is the equitable approach that will be successful if there is an active and engaged community and a somewhat forward thinking local government. Respondents believe that the Ventura falls into this category and this Transition Initiative could be a sound approach.

…some of it is just getting out of their way a little bit. Government tends to say ‘we’ll just come in and do it’ and we are trying not to but the good thing about not having any resources is we don’t do that because we can’t. So, I think it actually allows people to do their own thing; we get out of their way, which I think is a good thing. And people are. (Interviewee E 2010).

Not having resources to focus on post-peak oil and climate change community action planning inhibits local government from taking action and potentially ‘get in the way’, however actually having or allocating resources to the effort would enable everyone to productively work together collectively co-creating community resiliency.

And it doesn’t need to be the policy makers; it needs to be the community coming to the policy makers. So like I say when the people lead the leaders will follow. And the people need to lead on this one…this is one they need to lead on (Interviewee J 2010).

Further study needs to be done on how willing and in what context the general public will alter their lifestyle and ask local government to apply laws or restrictions on their current behavior. Local government needs to act and lead just as much as the local community in order to facilitate the type of change needed and the rate that change needs to happen.

*The education of youth is vital for altering lifestyle behavioral patterns in order to be better prepared for a post-peak oil and climate change future.*

In order for the City of Ventura to be successful at preparing for post-peak oil and climate change, the need for a change in behavior within individuals can have a collective influence upon the community. This will further set the stage for a community-wide supported plan, and a much smoother implementation. Many interviewees identified targeting the youth of the community,
through education, as a way in which behavioral change might best be accomplished within the City of Ventura.

Start at the grade school level to educate the youth. They go home and tell their parents and gradually, over time, it gets integrated in their daily lifestyle (Interviewee A 2010).

In-school education programs, such as recycling or composting, have been highly successful in influencing the general public as children take home what they have learned in school and teach their family.

…[educating] their children is going to be the best way, really. The behavior at the home changes because the kids get told the right information at school. So getting kids engaged and they are fresh and they can learn this stuff and it becomes real to them and they can sort of put the pressure on at home. And that’s how we recycle more now because our kids learned how to do it and then we told the old people to do it. …we have to go there where they are fresh and we can kind of mold them in our image…and have them do that at home (Interviewee E 2010).

…it’s critical to get youthful people involved…25 and under…all the way down. Something that Ventura has done really well is in-school education. …we have to match that [in-school education] and kids’ awareness with something like a…draconian measure, where they actually enforce composting and their whole waste system. …we have to enforce it on the adults in the household. …the only way to really get there is to get the youth, while they are young (Interviewee F 2010).

A more comprehensive duel approach would be to integrate a robust outreach and education campaign along with specific laws or regulations to help amplify the changes required across the demographic spectrum. Education for both children and adults, along with regulations that are supported and understood by the community, can arise due to the awareness raised from the education campaign.

Dependence upon automobiles must be addressed in order for the community to be better prepared for the impacts of post-peak oil and climate change. A robust mass transit infrastructure needs to be in place before we can expect, force or ask the public to change lifestyle patterns and choices.

Addressing the issues surrounding transportation within the City of Ventura was highlighted frequently by respondents, although this was often raised in the context of factors that would contribute to implementation and in the context of which factor was the most important to
influence implementation. Additionally, the challenge of overcoming dependence upon their cars was identified as a barrier. Many comments addressed the lack of efficient and widespread mass transportation within the City of Ventura and the surrounding region. The most substantial challenge identified was how to promote and require the community to utilize alternative forms of transportation when the systems and infrastructure does not exist to the extent that it is needed.

Well I think Ventura right now, it’s 51% and it’s growing maybe up to 55% of our residents commute out of town to work. So I think transportation is going to be a big concern (Interview J 2010).

Further research to determine exactly where community members are commuting for work would help to better plan for the most effective alternative transportation infrastructure. Additionally, creating more jobs with livable wages within the City of Ventura would help in allowing people to decrease reliance on their cars and commuting out of town.

Public transit is a huge and easy one to look at right now. We have just one bus system and compared to other cities who are doing public transportation really well, it doesn’t come often enough to really make it easy to ride and to get from point A to point B. …if we created some type of infrastructure that had more bus routes and more busses. Even when it comes to our Amtrak train and how the state runs that system. If we could upgrade that and have more train tracks, you could get from point A to point B faster and not have to stop 15 times in order to get to your stop and then you’re there three hours later and it was only 12 miles. That’s not working (Interviewee C 2010).

Some infrastructure exists within Ventura, yet has a long way to go to offer and operate services that meet the needs of the community. A study on routes and times currently available could determine the needs of the people using transit. Surveying non-users to determine how to better serve the community and be more effective is also needed. Additional gaps could be addressed once they known, and more extensive infrastructure developed.

People will begin to get out of their cars when several things happen. First, when the price of gasoline gets to whatever their tipping point is, and they say ‘I’m not going to pay that anymore’, they are going to either switch to a more efficient vehicle or they are going to find alternative transportation. Secondly, if they are going to alternative transportation, it better be one that is fairly regular and fairly available to them, and that’s the harder part (Interviewee B 2010).

For example, in the east end where it is more like suburbia, where are you going to walk to? You can walk around a neighborhood but if you want to go down to
your gym, you’re going to actually have to get into your car and drive. So creating places for people to walk to and getting some of that infrastructure to get people out. And get them thinking differently that they don’t actually have to take their car to get somewhere and it’s actually quite nice (Interviewee C 2010).

Creating and planning for walkable neighborhoods is just as important as alternative transportation infrastructure. Encouraging mixed-use neighborhood centers with alternative transportation modes is critical for planning. Basic services should be offered within the neighborhood center to limit the extensive use of the transportation system. Walkable neighborhoods also provide other collateral benefits such as a more healthy and active community, as well as more sociability and community identity.

**Being situated as a coastal community, the implications are vast, complex and challenging.**

Coastal communities are inherently vulnerable to a number of potential impacts due to post-peak oil and climate change that inland communities do not face. Sea-level rise brings impacts to coastal real estate, and impacts two of the largest economic drivers for the City of Ventura: the harbor and beach-based tourism.

Special interest groups as far as properties along the beach are going to be concerned. A huge implication is tourism, which is at least 10% of the economy. If we have climate change that sort of messes with our beach and messes with our harbor, we need to be incredibly concerned (Interviewee D 2010).

I think that it is very important because we are a coastal community that we should number one be taking some responsibility ourselves for trying to limit…our carbon footprint but also because of the ramifications that it has…from post-peak oil and every community should be dealing with it because it is really going to change how we view our lives and our industry and really the community as a whole around us (Interviewee J 2010).

As a coastal community, if there is a rise in the ocean height then that’s going to have an impact on us because we are a beach front community and we have some major players down there with some major investments. If storms should get greater and the waters higher and closer, then the damage is going to be greater. On the other hand, if the average global temperature is indeed creeping up, then the other things we are going to see in result of the ocean warming is changes in the species that exist out there that has an impact obviously on our commercial fishing group. The fishing industry that exists in the harbor is the main reason for our harbor being dredged by the core of engineers; so therefore if the fisheries start to fail, then the domino effect is will the core continue to want to continue to dredge because the fisheries aren’t thriving and so what happens in those instances (Interviewee B 2010)?
The concern and awareness regarding the potential for a domino effect is quite very important in terms of being able to communicate the true impacts to the community. It’s not just the economy that is at risk, nor the wealthy who can afford beach-front property. Climate change will affect the very basis of tourism such as recreational boating in the harbor.

There are many other infrastructural concerns on or near the vulnerable beaches of Ventura such as the wastewater treatment plant. Post-peak oil and climate change impacts such as rising sea-level, affect the location of infrastructure such as the wastewater treatment plant. Planning for those vulnerable and exposed coastal activities and infrastructure is also a substantial component that all coastal communities need to plan for in a post-peak oil and climate change community action plan.

An action plan that is integrated into the General Plan with small, measurable and easily achievable steps outlined for successful implementation, with it leading into conceptual long-range action items.

Many interviewees acknowledged that the integration of a post-peak oil and climate change community action plan into the City of Ventura’s General Plan would be of great benefit, even if it is a guiding document designed to inform policy, land use patterns, transportation priorities and new development permit parameters and codes. Additionally, an action plan that outlines a phased approach to implementation with a common set of metrics for measuring success is of great benefit.

We have a General Plan that is just that; it’s general. It’s not like this is a new plan or a new action plan, this is something that is just an action plan attached to the things that you have already adopted in the General Plan (Interviewee J 2010).

Not only would integration into the general plan be beneficial, but how it is integrated will be important for successful implementation. Adoption into each department of local government will give staff clear direction on how it can be applied to what they do.

We’ve adopted localized community plans to implement the general plan and that kind of stuff. If it was somehow organized…instead of dividing it by the six priority areas that we want to do economic development, divide it by…a public
works section, what can public works do to implement these policies and what can I do in community development? If it were divided by what we do, it would make a difference. If we were updating the zoning code, we can kind of just put ideas specifically into the code that would help. Or if we are reviewing a development project, it could say 'projects like this, if you have a hundred unit apartment complex, these are the concrete things you can do in the design of that complex to minimize these impacts (Interviewee E 2010).

We decide the land use patterns based on infrastructure, commerce needs, motility connections, other resources whether it is farmland or whether its hillsides are soft and can crumble or are high fire hazard areas. We figure out where to put the people. We figure where the jobs should be placed and try to work with the public entities to determine where those public service buildings should be. And then everything else has to take place once we’ve laid it out on paper in our general plan and through our zoning mechanisms (Interviewee B 2010).

Have it be something that we measure our success on an annual basis to get to that outcome might be valuable. …we are big in performance measures and we do annual performance measures and they have to be outcome based and actually measurable (Interviewee E 2010).

Measurable steps provide the framework for understanding how well, or how badly, implementation is being conducted. Having clear metrics to evaluate productivity will give feedback loops the opportunity to consistently improve the way in which a post-peak oil and climate change community action plan is implemented for the City of Ventura.

**No need for a new plan to be developed.**

There are numerous pre-existing planning documents that the City of Ventura has developed that are perceived by respondents to include aspects of a post-peak oil and climate change community action plan. Respondents felt there is no need to create a new community action plan for post-peak oil and climate change. Rather than expend resources to develop a new plan, reviewing the existing plans and collating all the elements to create an action plan is what is needed:

…there may not be a need for post-peak oil planning per say, but if we just take the guidelines would emphasis about equity and efficiency and cleanliness, and then take a look at all the aspects that are extant in our current plans that call for those kinds of practices…string them all together and *there’s* the plan. …Take a look at all the practices and implementation currently under way, and then look at how that matches up to our plans and then I think it would show where the significant gaps are (Interviewee I 2010).
This first step would be valuable in assessing what the City of Ventura has already integrated into its plans that match the guidelines and principles of post-peak oil and climate change community action planning. This inventory would also identify the gaps yet to be integrated and provide a starting point from which city planners can begin. It is most likely that there are still many aspects that the City of Ventura still needs to address in order to increase the community’s capacity for resilience and place it in a position for successful resiliency adaptation through the implementation of a post-peak oil and climate change community action plan.

**Opportunity for Ventura to be a model.**

Some interviewees noted the benefits and importance for the City of Ventura to be a model and a leader in this area. Many feel that given the progressive nature of the community and the precedent the award winning 2005 General Plan set for the city, it put Ventura in a position to commit to being a leader and a model for post-peak oil and climate change community action planning for other coastal communities and cities:

…take this to the next step and be the poster child for climate change. Because we are small enough… in Ventura county, we can do stuff here because we are…smaller, manageable, sort of [a] testing ground in a way. And so we have some potential to do stuff here that other places can’t do… and frankly if Ventura is willing to do it then maybe it sets us apart from everybody else (Interviewee E 2010).

Because the City of Ventura is a smaller community with a population of 109,484 (United States Census Bureau 2014), many feel that there is an advantage in terms of not only engaging the public and getting community participation but also in terms of pilot programs and measuring metrics for feedback and analysis to determine how well suited they might be for effective positive change.

…‘do we want to be a leader?’ Do we want to take the risk of being out ahead of this issue at a time when there is skepticism, when there are other priorities, when there is active ideological opposition? That’s a fair question, and it is a question that we are grappling with…that I grapple with. So, do we have to deal with it do we have to confront it? To me there is no doubt. The hard question is how much political capital and how much pioneering do we do (Interviewee M 2010).
I also think that we as a community, while we are really tasked with making it work in our own community, the idea of us being a model for other communities to I think is a big piece of it (Interviewee J 2010).

Some interviewees clearly considered being a leader as an important component to the pride of the City of Ventura, while others questioned whether or not it is what should be the main motivation behind allocating scarce resources while other priorities, such as street paving and keeping libraries open, struggle to procure funding.

On the other hand, one interviewee considered Ventura as a follower and not a pioneer or leader.

“Well, I think it is important for the world, but for Ventura in itself, it’s not like we are setting the standard by which other people are making any of their decisions or that we are groundbreaking in any particular way. …I see our community as more of a….we are not early adopters. I see us more as following, so I don’t see it as critical that we set the standard, but I think it is important for the whole world. So I wouldn’t use that as a reason to say, me personally, that we shouldn’t do it.”

Sentiment was evident that focusing on local solutions would not change the situation globally, so why be a leader? Why invest resources to an effort that will not fix the worlds problems?

However, other respondents saw the multitude of benefits that come with being prepared locally for the potential effects of peak oil and climate change. With an award winning General Plan (2005) and a Post-Peak Oil Vision Plan (2007) that is one of only a few peak oil preparation plans in the world, the City of Ventura is already a leader in progressive and transformative planning.

**Factors of Influence: Major Categories**

Content analysis/analytic induction performed on each transcript produced three categories organized in a tiered format based upon content analysis coding and grouping processes. Tier 1 is identified as the overarching and directive category, while Tier 2 is more descriptive, and Tier 3 is specific to the exact quote coded within the transcript. The overarching main Tier 1 categories, within which Tier 2 and 3 are organized, are summarized below.
Barriers

Barriers: Main Tier 1 Categories

- Education Awareness
- Beliefs & Awareness
- Complexity
- Politics
- Planning
- Infrastructure
- Community
- Lifestyle
- Human Habit/Culture
- Consequences/Rules/Laws/Rewards
- Economy

Many of the barrier categories identified by the analysis of the semi-structured interviews are reflected within the literature for models of planning and behavioral change. Ajzen and Fishbein’s (1980) theory of planned behavior, or reasoned action, helps us to understand an identified barrier within individuals and the community as a whole for the City of Ventura regarding beliefs and awareness, including educational awareness, especially if individuals do not hold an attitude of importance regarding post-peak oil and climate change. If the community is not aware or accurately informed, their behavioral intention or attitude toward the topic will not be reflected in their actions (Ajzen 1991, Mullen et al. 1987, Ajzen & Fishbein 1980). On a community scale, this identified barrier could be addressed with integrating post-peak oil and climate change education and awareness campaigns into local and regional extension programs, since they already exist to educate residents and address local issues (Brugger & Crimmins 2015).

Bandura’s Social Learning Theory suggests that behavioral change is created within a social or observational context. Providing an opportunity for community members to participate in continuous reciprocal interaction with other community members will provide a learning-by-doing experience while developing cognitive capacity to see the consequences of different actions and inactions (Bandura 1971) while faced with the effects of post-peak oil and climate change.

Consequences, rules, laws and rewards can be understood through the Social Learning Theory model and self-regulatory process of stimulus, cognitive and reinforcement control with
understanding that behavior is extensively controlled by its consequences (Bandura 1971). In this case, a lack of consequences, rules, laws and rewards within the City of Ventura is a barrier to the successful implementation of a post-peak oil and climate change community action plan.

Planning barriers can be overcome by integrating a more transformative planning approach through scenario-based planning (Schwartz 1991, Wack 1985a), using resiliency principles for coastal community planning (Tierney 2014, Masterson et al. 2014, Beatley 2009, Newman et al. 2009), while integrating a more equitable top-down and bottom-up approach like Transition Initiatives (Hopkins 2008) for a more complete community-based action plan that successfully increases the adaptive capacity of the City of Ventura to deal with the impacts of post-peak oil and climate change (Prashar et al. 2013).

**Quantitative Results – Barriers**

The data processing matrix (sampled in the Methods Chapter) provides a qualitative opportunity to analyze the results by identifying the frequency with which Tier 1 categories were mentioned and the relative frequency that they occurred in each of the fifteen (15) interviewees. The entire quantitative barriers matrix is shown below.

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Tier 1</th>
<th>By Interview</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education Awareness</td>
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</tr>
<tr>
<td>Beliefs &amp; Awareness</td>
<td></td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Complexity</td>
<td>Politics</td>
<td>Planning</td>
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Complexity: 6
Politics: 16
Planning: 31
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<th>Category</th>
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<th>12</th>
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<tbody>
<tr>
<td>Infrastructure</td>
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<td></td>
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<tr>
<td>Community</td>
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<tr>
<td>Lifestyle</td>
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</tbody>
</table>
An analysis of the results from the above Tier 1 barriers with quantitative interview analysis is shown in the table below.
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<th>Tier 1</th>
<th>Total</th>
<th># Of Interviewees</th>
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<td>Beliefs &amp; Awareness</td>
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<tr>
<td>Lifestyle</td>
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<tr>
<td>Human Habit/Culture</td>
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</tr>
<tr>
<td>Consequences/Rules/Laws/Rewards</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Economy</td>
<td>33</td>
<td>14</td>
</tr>
</tbody>
</table>

Table 7: Tier 1 Barrier Frequency

In reviewing the Tier 1 Barriers and the number of times they were mentioned in the identified codes from interview transcripts, they rank in the following order, highest to lowest.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Barrier</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Community</td>
<td>36</td>
</tr>
<tr>
<td>2</td>
<td>Economy</td>
<td>33</td>
</tr>
<tr>
<td>3</td>
<td>Planning</td>
<td>31</td>
</tr>
<tr>
<td>4</td>
<td>Politics</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>Beliefs &amp; Awareness</td>
<td>13</td>
</tr>
<tr>
<td>6</td>
<td>Lifestyle</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>Infrastructure</td>
<td>11</td>
</tr>
<tr>
<td>8</td>
<td>Human Habit/Culture</td>
<td>8</td>
</tr>
<tr>
<td>9 (tied)</td>
<td>Education Awareness</td>
<td>6</td>
</tr>
<tr>
<td>9 (tied)</td>
<td>Complexity</td>
<td>6</td>
</tr>
<tr>
<td>10</td>
<td>Consequences/Rules/Laws/Rewards</td>
<td>5</td>
</tr>
</tbody>
</table>

From this analysis, the Tier 1 category of Community was identified as the biggest barrier. The Community category includes barriers such as public buy-in, priorities, lack of commitment, community education and equity. The lowest level barrier identified toward the implementation of a post-peak oil and climate change community action plan for the City of Ventura is Consequences/Rules/Laws/Rewards. This includes a lack of incentives or rewards, unclear development rules and a lack of laws that would otherwise motivate community members.
We can further analyze the Tier 1 barriers by ranking the frequency by which the categories were mentioned across all fifteen (15) interviewees. The frequencies of Tier 1 barrier categories are ranked below.

<table>
<thead>
<tr>
<th>Rank</th>
<th>Barrier</th>
<th># of Interviewees</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (tied)</td>
<td>Community</td>
<td>14</td>
</tr>
<tr>
<td>1 (tied)</td>
<td>Economy</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Planning</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>Beliefs &amp; Awareness</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>Politics</td>
<td>8</td>
</tr>
<tr>
<td>5 (tied)</td>
<td>Lifestyle</td>
<td>7</td>
</tr>
<tr>
<td>5 (tied)</td>
<td>Infrastructure</td>
<td>7</td>
</tr>
<tr>
<td>6</td>
<td>Human Habit/Culture</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Education Awareness</td>
<td>4</td>
</tr>
<tr>
<td>8 (tied)</td>
<td>Complexity</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Consequences/Rules/Laws/Rewards</td>
<td>3</td>
</tr>
</tbody>
</table>

This analysis follows nearly the same ranking as the number of times each category was mentioned, showing that interviewees felt barriers associated with community, economy and planning were greatest based upon the frequency each was mentioned within the coding, but also the number of respondents who identified these as concerns. This analysis shows that the City of Ventura has barriers around an engaged, committed and educated community, and a city government that does not have an allocated budget towards transformative planning processes to address post-peak oil and climate change resilience and adaptation.

A table highlighting the main three (3) Barrier Category tiers can be seen below to further show the detail of categories within the overarching Tier 1 categories analyzed above.
<table>
<thead>
<tr>
<th>Public Priorities</th>
<th>Competing Priorities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differing Community Needs</td>
<td></td>
</tr>
<tr>
<td>Lack of Commitment</td>
<td>Lack of Interest</td>
</tr>
<tr>
<td></td>
<td>Lack of Concern</td>
</tr>
<tr>
<td></td>
<td>Lack of Community Engagement</td>
</tr>
<tr>
<td></td>
<td>Lack of Cooperation</td>
</tr>
<tr>
<td></td>
<td>Civic Disconnect</td>
</tr>
<tr>
<td></td>
<td>Controversy</td>
</tr>
<tr>
<td></td>
<td>Conflicting Messages</td>
</tr>
<tr>
<td></td>
<td>Doubt</td>
</tr>
<tr>
<td></td>
<td>Unrealistic Goals</td>
</tr>
<tr>
<td></td>
<td>Limited/Predictable Community Participation</td>
</tr>
<tr>
<td></td>
<td>Disenfranchisement</td>
</tr>
<tr>
<td></td>
<td>Volunteer Fatigue</td>
</tr>
<tr>
<td></td>
<td>Burnout</td>
</tr>
<tr>
<td></td>
<td>Community Apathy</td>
</tr>
<tr>
<td></td>
<td>Overall Apathy</td>
</tr>
<tr>
<td>Education</td>
<td>Education</td>
</tr>
<tr>
<td></td>
<td>Population Turnover</td>
</tr>
<tr>
<td>Equity</td>
<td>Equity Fairness</td>
</tr>
<tr>
<td></td>
<td>Political Will</td>
</tr>
<tr>
<td>Money/Funding</td>
<td>Investment Risk</td>
</tr>
<tr>
<td></td>
<td>Economic Pressure</td>
</tr>
<tr>
<td></td>
<td>Economic isolation</td>
</tr>
<tr>
<td></td>
<td>Competing Economic Choices</td>
</tr>
<tr>
<td></td>
<td>Backlash From budget cuts</td>
</tr>
<tr>
<td></td>
<td>Immediate VS Future Needs</td>
</tr>
<tr>
<td>Cost/Benefit</td>
<td>Resources</td>
</tr>
<tr>
<td></td>
<td>Funding</td>
</tr>
<tr>
<td></td>
<td>Money</td>
</tr>
<tr>
<td></td>
<td>Cost</td>
</tr>
<tr>
<td></td>
<td>Cost Benefit</td>
</tr>
<tr>
<td></td>
<td>Core</td>
</tr>
<tr>
<td></td>
<td>Values/Community Resistance</td>
</tr>
<tr>
<td></td>
<td>Perception of Need</td>
</tr>
<tr>
<td></td>
<td>Competing Priorities</td>
</tr>
<tr>
<td></td>
<td>Influence of Resource</td>
</tr>
<tr>
<td>Costs on behavior</td>
<td>Consumption</td>
</tr>
<tr>
<td>-------------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Development/Growth Economy</td>
<td>Agricultural Practices</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>31</td>
</tr>
<tr>
<td></td>
<td>Historical Legacy</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planning Process/Implementation</td>
</tr>
<tr>
<td></td>
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<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Planning Consistency</td>
</tr>
<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 8: Three Main Barrier Categories (Tier 1 – 3)

Tier 1 – 3 barriers highlight concepts from the literature that can be utilized to overcome these barriers. In reviewing the top three (3) barriers identified above, the tier 1 barrier of community can be overcome by the utilization of the extension program model reviewed in the literature review (Brugger & Crimmins 2015, Bowling & Brahm 2002). The community barriers include aspects such as community buy-in, skepticism, competing needs and priorities, a lack of concern and engagement, apathy and community education and awareness. Extension programs have the capacity to facilitate positive community change and knowledge dissemination by engaging the community with local information and local expertise (Brugger & Crimmins 2015, Milburn et al. 2010, Bowling & Brahm 2002).

In dealing with the economic barriers of funding the implementation of a post-peak oil and climate change community action plan, the City of Portland developed beneficial partnerships with various utilities and other agencies to overcome the cost and investment implementation requires by a municipality (Anderson 2014). In addition, studies have shown that effectively dealing with both economic barriers, and the perception of economic barriers on the part of both politicians and the public, is an important consideration for any planning exercise (Fulton and Shigley 2012, Measham et al 2011, Fulton 2001).

The identified barriers within planning can be addressed by a multitude of factors including but not limited to a political champion within local government, and allocated funding for city staff to integrate post-peak oil and climate change resiliency planning guidelines and principles into existing policy driving plans such as the General Plan. Resiliency planning, such as Transition Initiatives, can help to foster accountability and a shared sense of responsibility through a top-down and bottom-up planning approach (Hopkins 2008). This approach can help educate the community while providing civic buy-in and address any fatigue or lack of staffing within local government (Hopkins 2008). Clear action planning steps like those described by
both Malcolm (2015) and Shapiro (2011) can provide continuity, education, accountability, focused direction and follow through while providing a direct connection to the City of Ventura’s vision (Malcolm 2015, Prashar et al. 2013, Shapiro 2011).

**Supporting Factors**

*Supporting Factors: Main Tier 1 Categories*

- Benefits
- Individual Personal Beliefs
- Community Identity & Infrastructure
- Future Legacy
- Coastal Community
- Community Participation
- Planning & Design
- Politics
- Environmental Ethics/Values
- Infrastructure
- Economics

Many of the Tier 1 Supporting Factors identified by the interviewees are reflected within the literature for models of planning and behavioral change. By highlighting and educating the overall and collateral benefits of planning for post-peak oil and climate change within the City of Ventura, the model of Reasoned Action comes into play as motivational factors for behavioral change (Ajzen 1991, Mullen et al. 1987). The Health Belief model provides insight into an individual’s actions based on a perceived threat and that individual’s susceptibility to that threat and its potential severity (Mullen et al. 1987, Janz & Becker 1984). The benefits of one’s actions to avoid the perceived threat can provide behavioral change through education about the threat and the benefits of taking action by changing one’s lifestyle and behavior. Planning for post-peak oil and climate change provides many collateral benefits for a healthy community through cleaner air quality, healthy exercise and mobility, and social interaction. Providing the community with these health benefits, illustrates the Health Belief model for behavioral change.

Building upon the Health Belief model on a community-wide scale, the PRECEDE model includes not only attitudes and beliefs, but also reinforcing factors like rewards and
incentives including social support for changing behavior (Mullen et al. 1987). Clearly these models for behavioral and lifestyle change support the identified supporting factors by the interviewees.

For example, the supporting factor identified by respondents as ‘a future legacy’ is reflected in the self-efficacy model by which a person believes they can produce a desired effect by their own actions and serves as a motivator for action and the value placed on those actions, such as creating a legacy for future generations by planning for post-peak oil and climate change (Bandura 1999, Bandura et al. 1990).


Quantitative Results – Supporting Factors

The data processing matrix sampled in the Methods Chapter provides a quantitative opportunity to analyze the results by identifying the total number of times Tier 1 topics were mentioned and the frequency by which the were identified by each of the fifteen (15) interviewees. The entire supporting factors matrix is shown below.

<table>
<thead>
<tr>
<th>Supporting Factors</th>
<th>Tier 1</th>
<th>By Interview</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A  B  C  D  E  F  G  H  I  J  K  L  M  N  O</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Benefits</td>
<td></td>
<td></td>
<td>12</td>
</tr>
</tbody>
</table>

151
<table>
<thead>
<tr>
<th>Coastal Community</th>
<th>19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Community Participation</td>
<td>37</td>
</tr>
<tr>
<td>Planning &amp; Design</td>
<td>49</td>
</tr>
<tr>
<td>Category</td>
<td>Count</td>
</tr>
<tr>
<td>---------------------</td>
<td>-------</td>
</tr>
<tr>
<td>Politics</td>
<td>30</td>
</tr>
<tr>
<td>Environmental Ethics/Values</td>
<td>9</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>10</td>
</tr>
<tr>
<td>Economics</td>
<td>27</td>
</tr>
</tbody>
</table>
Table 9: Tier 1 Supporting Factors with Quantitative Interview Analysis

An analysis of the results from the above Tier 1 supporting factors with quantitative interview analysis is shown in the table below.

<table>
<thead>
<tr>
<th>Tier 1</th>
<th>Total</th>
<th># of Interviews</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefits</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>Individual Personal Beliefs</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Community Identity &amp; Infrastructure</td>
<td>40</td>
<td>15</td>
</tr>
<tr>
<td>Future Legacy</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Coastal Community</td>
<td>19</td>
<td>10</td>
</tr>
<tr>
<td>Community Participation</td>
<td>37</td>
<td>14</td>
</tr>
<tr>
<td>Planning &amp; Design</td>
<td>49</td>
<td>15</td>
</tr>
<tr>
<td>Politics</td>
<td>30</td>
<td>12</td>
</tr>
<tr>
<td>Environmental Ethics/Values</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>Economics</td>
<td>27</td>
<td>9</td>
</tr>
</tbody>
</table>

Table 10: Tier 1 Supporting Factors Frequency

In reviewing the Tier 1 supporting factors and the number of times they were mentioned in the identified codes from interview transcripts, they rank in the following order, highest to lowest.
<table>
<thead>
<tr>
<th>Rank</th>
<th>Supporting Factor</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Planning &amp; Design</td>
<td>49</td>
</tr>
<tr>
<td>2</td>
<td>Community Identity &amp; Infrastructure</td>
<td>40</td>
</tr>
<tr>
<td>3</td>
<td>Community Participation</td>
<td>37</td>
</tr>
<tr>
<td>4</td>
<td>Politics</td>
<td>30</td>
</tr>
<tr>
<td>5</td>
<td>Economics</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>Coastal Community</td>
<td>19</td>
</tr>
<tr>
<td>7</td>
<td>Benefits</td>
<td>12</td>
</tr>
<tr>
<td>8</td>
<td>Infrastructure</td>
<td>10</td>
</tr>
<tr>
<td>9</td>
<td>Environmental Ethics/Values</td>
<td>9</td>
</tr>
<tr>
<td>10</td>
<td>Future Legacy</td>
<td>5</td>
</tr>
<tr>
<td>11</td>
<td>Individual Personal Beliefs</td>
<td>2</td>
</tr>
</tbody>
</table>

From this analysis, the Tier 1 category of Planning & Design was identified by interviewees as the most commonly mentioned supporting factor for the implementation of a post-peak oil and climate change community action plan for the City of Ventura. The Planning & Design category includes supporting factors such as being prepared with good resource planning and controlling land use through integration into the General Plan while learning from cities who are ahead of Ventura. It also includes the importance of specific components of planning, such as clear goals and direction with community engagement while holding existing plans accountable.

The least commonly mentioned supporting factor toward the implementation of a post-peak oil and climate change community action plan for the City of Ventura was Individual Personal Beliefs and Future Legacy. This shows that personal beliefs around the importance of being prepared and that an overall perspective of leaving a legacy for future generations are not perceived by respondents as a major factor that will ultimately support the implementation of a resiliency plan for the City of Ventura.

We can further analyze the Tier 1 supporting factors by ranking the number of the fifteen (15) interviewees who mentioned each factor in the interview. The number of interviewees whose responses fell within each Tier 1 Supporting Factor categories are ranked from high to low below.
This analysis follows nearly the exact same ranking as frequency each category was mentioned, showing that the largest number of interviewees felt that supporting factors associated with planning, community identity, infrastructure and community participation were important based both upon the frequency of occurrence and the number of respondents citing that supporting factor. This analysis shows the respondents felt the capacity of the City of Ventura in the planning and design process, community identity and infrastructure provided the most support towards transformative planning processes to address post-peak oil and climate change resilience and adaptation.

A table highlighting the main three (3) Supporting Factor Category tiers can be seen below to further show the detail of categories within the overarching tier 1 categories analyzed above.

**Supporting Factor Categories**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Frequency</th>
<th># of Interviewees</th>
<th>Tier 1</th>
<th>Tier 2</th>
<th>Tier 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>49</td>
<td>15</td>
<td>Planning &amp; Design</td>
<td>Resource Planning</td>
<td>Preparedness</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Importance of Plans</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Good Environmental Design</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Control Land Use</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Joint Coastal Cities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Plan &amp; Share Resources</td>
</tr>
</tbody>
</table>

157
<table>
<thead>
<tr>
<th>City Planning</th>
<th>Bioregional/Watershed Approach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Commitment to Smart Growth &amp; Infill</td>
<td></td>
</tr>
<tr>
<td>Existing Planning</td>
<td>Post-Peak Oil Vision Plan as an Asset</td>
</tr>
<tr>
<td>Action &amp; Implementation to Follow Vision</td>
<td></td>
</tr>
<tr>
<td>Established Design Guidelines for Walkable Neighborhoods</td>
<td></td>
</tr>
<tr>
<td>Accountability for Adopted Existing Plans</td>
<td></td>
</tr>
<tr>
<td>Existing Plan Adjustments - Increased Drought</td>
<td></td>
</tr>
<tr>
<td>Examples to Learn From</td>
<td>Importance of Learning from Who's Gone Before</td>
</tr>
<tr>
<td>Components of a Plan</td>
<td>Phased Plan</td>
</tr>
<tr>
<td>Clear Goals &amp; Direction</td>
<td></td>
</tr>
<tr>
<td>Built Upon Consensus</td>
<td></td>
</tr>
<tr>
<td>Positive Steps of Implementation</td>
<td></td>
</tr>
<tr>
<td>Accessible &amp; Visible</td>
<td></td>
</tr>
<tr>
<td>Integrate Credibility for Action</td>
<td></td>
</tr>
<tr>
<td>Roadmap for a Sustainable Community</td>
<td></td>
</tr>
<tr>
<td>Measurable</td>
<td></td>
</tr>
<tr>
<td>Achievable</td>
<td></td>
</tr>
<tr>
<td>Community Engagement</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>40</td>
</tr>
<tr>
<td>Messaging</td>
<td>Media Blitz</td>
</tr>
<tr>
<td>Change the Doomsday Message</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Description</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>Change Social Norms via Observation of Others</td>
</tr>
<tr>
<td></td>
<td>Habit Change</td>
</tr>
<tr>
<td></td>
<td>Lifestyle Enhancement</td>
</tr>
<tr>
<td>Community Identity &amp; Needs</td>
<td>Predicting Future Lifestyles &amp; Needs</td>
</tr>
<tr>
<td></td>
<td>Understanding Community Issues</td>
</tr>
<tr>
<td></td>
<td>Fairness, Equity &amp; Balance</td>
</tr>
<tr>
<td></td>
<td>Social Conscience for Sustainability</td>
</tr>
<tr>
<td>Educated/Connected Community</td>
<td>Community Involvement &amp; Personal Relationships</td>
</tr>
<tr>
<td></td>
<td>Educated Community</td>
</tr>
<tr>
<td>Education</td>
<td>Parents Influence on Families</td>
</tr>
<tr>
<td></td>
<td>Educate Children</td>
</tr>
<tr>
<td></td>
<td>Educate the Community</td>
</tr>
<tr>
<td></td>
<td>Youth Appeal &amp;</td>
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<tr>
<td></td>
<td>Education</td>
</tr>
<tr>
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<td>Bottom-Up Approach</td>
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<td>Door-To-Door Canvassing</td>
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Table 11: Three Main Supporting Factor Categories (Tier 1 – 3)

A review of the Tier 1 – 3 supporting factors, shows interviewees identified planning and design as the most important factor that supports the successful implementation of a post-peak oil and climate change community action plan for the City of Ventura. Resilience planning for
coastal communities is a key aspect for taking action steps to build adaptive capacity (Beatley 2009) in Ventura. Guiding land development through strengthening building codes and proper land use designations can protect natural resources and accomplish a transformative approach to comprehensive city and regional planning for post-peak oil and climate change (Masterson et al. 2014, Measham et al. 2011, Newman et al. 2009). A California coastal community’s General Plan is a key tool for helping a coastal community to become more resilient in the face of post-peak oil and climate change (Anderson 2014, Beatley 2009). The City of Portland has had success in the integration of climate change guidelines and principles into their comprehensive plan with the establishment of design guidelines for walkable neighborhoods (Anderson 2014, City of Portland 2012).

Community identity and infrastructure is also identified as one of the top three supporting factors for implementation. This grouping integrates components of community behavioral change specific to the PRECEDE model and the three categories of pre-behavioral factors including predisposing factors, enabling factors and reinforcing factors (Mullen et al. 1987). These factors influence a community’s perception and identity including education, awareness and acceptance of issues (Mullen et al. 1987). Utilizing this model for community behavioral change can support strengthening the City of Ventura’s community identity through increased education, awareness and reinforcement (Mullen et al. 1987).

Community participation as an identified top three (3) supporting factor, can be further supported by the extension program model providing an established framework for community and regional participation through education and networking (Clarke 2003, Baker 1989, Whale 1989, Rolls et al. 1986). Members of a community who have a sense of ownership and buy-in with the decision-making process of their community are more apt to be prepared in the face of adversity (Rolls et al. 1986). Community participation is also supported by the bottom-up and top-down planning process of Transition Initiatives, which aims to empower citizen groups and
grassroots action to work with local government to increase adaptive capacity and implement post-peak oil and climate change resiliency plans (Hopkins 2008).

The application of final barriers and supporting factors identified within the semi-structured interviews and produced through a process of content analysis/analytic induction with coding and grouping are applied below to the final planning model, showing where they each have the highest capacity to influence the process gaps in the model.
Figure 12: Final Planning Model for Resilience: Post-Peak Oil & Climate Action Change
CHAPTER 6: DISCUSSION

Identifying key barriers preventing and factors supporting the process of moving from planning to implementation provides the City of Ventura with explicit insights into how to better craft a post-peak oil and climate change community action plan while providing the most successful opportunities for implementation and overall resiliency. This process supplies the City of Ventura with baseline data, or an inventory, of factors that can be either supported and built upon, or dealt with and avoided. A community action plan for post-peak oil and climate change can be developed based upon this data to be as foreseeable, and ultimately successful, in its implementation and intended outcome of increasing community capacity for resiliency.

This chapter looks at the various barriers and factors derived from the content analysis/analytic induction that influence the implementation of a community action plan, while discussing and highlighting the major literature that supports the findings for moving from planning to implementation, as well as professional insight of lessons learned from the City of Portland, Oregon, a community that has progressed to the end of the planning model developed in this research.

Barriers

Identified barriers from the content analysis/analytic induction of the Ventura results are outlined below with a discussion linking the City of Portland’s experience and literature to key findings within the research process.

<table>
<thead>
<tr>
<th>Ventura Barriers</th>
<th>Did Portland Address?</th>
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<tr>
<td>Education Awareness</td>
<td>Yes</td>
<td>Social Learning Theory (Bandura 1999, Bandura 1977)</td>
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<tr>
<td></td>
<td></td>
<td>Individual Motivation (Awareness of Threat) (Groppel 2011)</td>
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<td></td>
<td></td>
<td>Community Activation (Nutbeam 2000, Von Korff et al. 1992)</td>
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<td></td>
<td></td>
<td>PRECEDE Model (Nutbeam 2000, Bandura 1991, Mullen et al. 1987)</td>
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<tr>
<td></td>
<td></td>
<td>Community Extension Programs (Brugger &amp; Crimmins 2015, Milburn et al. 2010, Scheffert et al. 2008, Clarke 2003,</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Theory/Concept</td>
<td>References</td>
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<tr>
<th>Category</th>
<th>Inclusion</th>
<th>References</th>
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Education and Awareness

Results for the City of Ventura indicate that there are existing and perceived barriers regarding education and awareness in relation to both the general public and decision makers. An awareness of plans, the time investment required, how the planning process works, and a lack of awareness around the general issues surrounding peak oil and climate change are all factors that will affect the ability to make change in the City of Ventura. Newman et al. (2009) indicates that communities are unwilling to think and talk about the implications of peak oil and climate change, and seem to only be concerned with the short-term implications of increasing oil scarcity.

Post-peak oil and climate change resiliency planning is influenced considerably by how the issue is framed and communicated to the community, and is often perceived by local government staff as a public safety issue or a development issue (Measham et al. 2011). “[There] is a lack of useful, credible and relevant information about the nature of the climate risk to which [the community] must adapt [and is] a key barrier for planning for climate change” (Measham et al. 2011, pg. 902). Trying to make the issue real to people was a big barrier for the City of Portland. Most people do not think long-term, so it was important to focus on and talk about
things that people really cared about: kids; local air quality; local water quality; jobs; community livability; ability to catch a bus (Anderson 2014). This approach is reflective of the Health Belief model and Individual Motivation (or the Awareness of Threat model), where an individual envisions their children or loved ones being affected by a condition if they do nothing about it, they are cued into taking action and changing their behavior or lifestyle for the better (Groppel 2011). Translating what you are trying to do in coping with an abstract issue into those tangible impacts on individuals is essential. This means that planners and decision makers need to learn what issues are important to their communities, as well as the language and local vernacular, and employ effective communication in order to prioritize needs. Communicators must focus on and communicate real needs that will have positive mitigation or adaptation effects, i.e.: home-improvement by weatherizing a home to focus on how it will make a better for your family and won’t be as drafty and your kids will be warmer and you’ll save money on heating and cooling, instead of the intangible of lowering greenhouse gas emissions. So, a focus on real reasons for making change in behavior as a motivating factor, not peak oil or climate change is crucial (Anderson 2014).

Most people cannot understand a plan, they need to touch and feel something. Before Portland developed its community action plan, it created pilot projects, or demonstrations to provide examples and create public and political buy-in (Anderson 2014). For example, Portland led a green building innovation demonstration for a handful of buildings to show the council and community how some of these solutions could and will work (Anderson 2014). Then when an action plan was created and it had some of these pilot programs in it, people were already familiar with the concepts and successes it brought to the community (Anderson 2014). Community members engaged in these pilot programs reinforces Bandura’s Social Learning Theory by participating and learning by direct experience how a new lifestyle or behavioral pattern can be shown to be rewarding or of direct benefit while increasing cognitive capacity for higher mental
processes to permit both insightful and foresightful behavioral change (Bandura 1977, Bandura 1971).

The City of Portland identified the importance of continuously educating the City Council on the value of planning in order to ensure they understood that planning is just as important as paving a street and keeping a police station open. Helping decision makers see the value of this is difficult and a major barrier (Anderson 2014).

Politics

Ruppert (2009) points out that political leadership must operate from the stage of acceptance and not tailor approaches to those who are in denial, or who are trying to bargain for short-term profits. This is the great failure of the media, politics and economics in the current paradigm (Ruppert 2009). Portland’s forward thinking and early adoption of peak oil and climate change planning

…would not have happened unless they had strong political support. It is an absolute necessity to have a political champion because you can do fantastic work but it won’t see the light of day and you won’t get any resources to do anything with it unless you have a political champion. Additionally, building local business champions and support is essential in moving a plan forward (Anderson 2014).

Political support for implementation has been proven important in cooperative extension especially in developing early soil conservation programs (Milburn et al. 2010). Currently, there is no identified political champion within the Ventura city council to promote and build strong political support and allocate funding.

Measham et al. (2011) identifies two distinct political-institutional barriers: those stemming from local government internal structures and those occurring at higher levels of government. Internal institutional ‘silo’ structures within local government that constrain the successful implementation of resiliency planning for post-peak oil and climate change are a significant limitation.

The most acute internal limitation is a strong tendency to assign climate adaptation (along with mitigation) to the environment section of [local
government. This comes from a legacy of thinking of climate change as an environmental issue. The challenge for local government is to recognize climate [and post-peak oil] adaptation as a cross-sectoral issue. Institutional ‘silos’ are a historic problem, and climate adaptation is a renewed reason to address the challenge of cross-sectoral integration within [local governments] (Mesham et al. 2011, pg. 905).

The City of Ventura local government is not different and contains barriers due to the silo effect amongst departments and divisions. Breaking down these silos and integrating guiding principles of a post-peak oil and climate change community action plan throughout all departments within City of Ventura government will advance the effectiveness of plan goals and outcomes, and help to synergize local government on other issues as well.

The second barrier is the institutional context in which local governments function. Most often local governments defend their implementation actions at higher scales and within standardized frameworks, with little or no room to maneuver or adapt to meet the unique local context. “Therefore, a lack of attention to climate change [and post-peak oil] at the national and state levels leads to a lack of attention to climate [and post-peak oil] adaptation at the local level” (Measham et al. 2011, pg. 905). So without a legal basis for adjusting local resiliency planning in terms of post-peak oil and climate change, it is difficult for local governments to willingly integrate this approach into guiding policy-driven plans, especially in the face of competing planning interests. A political champion within local government for the City of Ventura would aid in overcoming this barrier with the self-efficacy belief system in that their desired effects and outcomes can be produced by their own actions regardless of other factors (Bandura 1991, Bandura & Ozer 1990, Bandura 1982, Bandura 1977).

**Planning**

Without an action plan, implementation is very difficult, and problems arise when action planning is not reflected within a strategic and visioning framework, while planning processes, including scenario planning, require extensive time and financial resources (Shapiro 2011, Chermack et al. 2001). Resiliency planning for post-peak oil and climate change is being
considered within municipal strategic plans as guiding principles for only a few municipalities. However, staff struggle with how to successfully implement resiliency strategies while there is little impact on development control and zoning plans. (Measham et al. 2011). “…Councils [are] still in the process of coming to terms with climate change [and peak oil], still developing plans and a long way from implementing them. When asked about how they might apply their policies regarding climate [and post-peak oil] adaptation, the most common response was that participants simply don’t know how to go about it” (Measham et al. 2011, pg. 902).

Given the diverse demographics of many urban communities, it can be challenging to develop a community action plan that provides outcomes that meet the various needs and priorities for individuals and families within a community (Prashar et al. 2013). Many local government planning efforts operate on overly simplistic notions of community being a homogenous, spatially fixed social group that shares a consciousness of being. Yet, Measham et al. (2011) states:

…planning theorists emphasize that a multiplicity of communities exists, differentiated (and frequently divided) by factors including gender, ethnicity, class, and age. This complexity poses multiple challenges for adaptation planning, in terms of what adaptation means for different groups, who benefits and loses from adaptation, and above all, how to define legitimate adaptation options (Measham et al. 2011, pg. 895).

The City of Portland realized through their planning process that even if they did everything right, not all Portlanders would benefit from the improvements, and as they became a more diverse city, they grappled with how to distribute the benefits produced from their visioning process. The Portland Plan (2012) envisioned healthy, connected and very livable neighborhoods, however if low-income families were all forced out and had to live fifteen miles from downtown because they could no longer afford to live in or near town anymore, this would defeat the purpose (Anderson 2014). Interestingly, none of the planning models reviewed for this study addresses this issue of gentrification and how to plan for the possibility within the framework of resiliency and adaptation planning for post-peak oil and climate change.
For the City of Ventura, the emphasis on relating back to not only the Post-Peak Oil Vision Plan (2007), but also the Ventura Vision (2000) that was the foundation for the city’s general plan, is imperative to maintain the foundational work that is the driving force for implementation. These vision plans have already procured community buy-in through the civic engagement processes employed to develop them.

Infrastructure

All communities are vulnerable to the impacts of peak oil and climate change for several reasons including being car-dependent, poor public transit systems and land use and growth patterns that provide few feasible alternatives to the use of the car (Beatley 2009). The City of Ventura is no different, and many interviewees identified the challenge that Ventura has very poor infrastructure for multimodal transportation systems. The design and planning of a community’s land use patterns, infrastructural investments, and built environments can be some of the most effective areas in advancing resilience (Masterson et al. 2014, Beatley 2009, Newman et al. 2009). “Coastal land use patterns should be compact and walkable and simultaneously conserve land, reduce car dependence and energy consumption, and allow the possibility of healthier lifestyles and living patterns” (Beatley 2009, pg. 73).

If Ventura is going to be successful in implementing a post-peak oil and climate change community action plan for resiliency and adaptation, investments must be made to provide an infrastructure that allows for an easy transition of its community to divest their cars and car culture. Infrastructure that includes all forms of modalities and built environments, which support them, are critical to the success of implementing an action plan for post-peak oil and climate change. The real changes necessary to make communities sustainable and resilient, such as providing significantly greater support for appropriate multimodal transit options, will not happen quickly enough (Newman et al. 2009).
Community Engagement

Historically civic engagement in the City of Ventura has been successful, with high levels of community participation. However, some interviewees identified with the sentiment that the community has been over-planned and that it is time to stop talking and planning and start acting. As Ajzen and Fishbein’s (1980) Theory of Planned Behavior or Reasoned Action describes, people are only willing to participate and work hard towards something that they believe will provide the outcome which they desire (Ajzen 1991, Mullen et al. 1987, Ajzen & Fishbein 1980). If the community feels that they have already invested enough effort and time in civic engagement processes, they are unlikely to be motivated to exert much of an effort to participate in more (Ajzen 1991).

A bottom-up and locally place-based planning approach is sound in principle, however there are multiple problems identified with this mode of planning in practice (Masterson et al. 2014, Measham et al. 2011). Often, the range of stakeholders and their respective interests are highly heterogeneous and do not lend themselves to consensus (Measham et al. 2011). This is not only relevant to defining universally desired outcomes, but may create a lack of community agreement over problem solving solutions to reach desired goals (Newman et al. 2009). Also, the integration of local, experiential knowledge with scientific knowledge has rarely been achieved in practice due to differences in competing knowledge that may not be reconciled in a single planning process (Brugger & Crimmins 2015, Measham et al. 2011). And finally, a bottom-up community-based approach has been criticized for the propensity for very narrow-minded thinking to dominate, with the possibility that strategies, which seem appropriate at one scale, can have harmful effects at other scales (Brugger & Crimmins 2015). What may be considered a reasonable and obvious adaptation measure for post-peak oil and climate change resiliency for one community may have maladaptive effects for others (Masterson et al. 2015, Measham et al. 2011).
Another gap that Portland identified is that the person who wrote the plan rarely influences community outreach and so the process of support and implementing change is separated from the process of planning. Pilot and demonstration programs are essential campaigns to create community and political support and buy-in for the planning and implementation process (Anderson 2014).

Given inherent diverse demographics of many urban communities, including Ventura, it can be challenging to develop a comprehensive action plan that provides outcomes meeting the different needs and priorities for individuals and families within a community. Therefore, further research on how to engage and include participation from a representative sample of a community is needed (Prashar et al. 2013).

**Human Habit, Lifestyle, and Culture**

In Portland, there was strong public support to ‘fix’ the problems, but at the same time there was resistance to taking the action necessary to mitigate the lifestyle impacts such as getting people out of their cars (Anderson 2014). A barrier that turned into an opportunity was when the City of Portland attempted to understand the psychology of behavioral change through trial and error. However, drawing insights from outside research, they discovered that people make change by mimicking other people (Bandura 1977). Bandura’s Social Learning Theory supports this understanding of behavior as being a cognitive process of observational learning in a social context (Bandura 1971). Peoples’ behavior results from direct experiences through observation of other peoples’ behavior and its consequences for them. New patterns of behavior can be acquired through this form of direct experience or by observing the behavior or lifestyle and its consequences to others, largely governed by the rewards and punishment that follow any given behavior (Bandura 1971). You ride your bike not because you are told to ride your bike or because of some brochure, but because someone you admire rides their bike. So change results from how you utilize the social forces found within the community to encourage positive behavioral change (Anderson 2014). The City of Portland’s experience supports Bandura’s
Social Learning Theory of cognitive processes that states through observational learning and social normative beliefs, behavioral change and lifestyle choices can be altered (Bandura 1977).

Within the City of Ventura, Bandura’s social learning theory is supported by such activities as bike-to-work week where community members observe others biking to work each day and may perhaps decide to change their behavior and ultimately lifestyle by observation of others.

Economics

As seen in the analysis results, a lack of funding is a significant perceived barrier to the implementation of an action plan, and cities like Ventura struggle to keep the budget balanced while still paving roads and keeping public libraries open.

…The issue of climate change appears ‘distant and cloudy’ amongst an already crowded agenda of demands placed on local government by concerned citizens. …The mandate of municipalities frequently extends from aesthetics to infrastructure, from parking to waste management. Such constraints to action may explain why the apparent interest in adaptation and adaptation planning hasn’t necessarily translated into implementation of actions to reduce vulnerability (Measham et al. 2011, pg. 891).

This issue of priorities within local government is reflected in the fact that municipalities are often highly constrained in terms of their financial capacity and can be linked to reactive management of community facilities and infrastructure rather than a proactive approach to the effects of post-peak oil and climate change. “…Stressed resources inhibits effective life-cycle planning [while these] resource constraints can lead to self-perpetuating short-term technical fixes rather than long-term integrated approaches to addressing [root] problems” (Measham et al. 2011, pg. 894). This reactive approach can be linked to the Health Belief model that financial limitations are considered a perceived threat to accomplishing the overall outcome the city may envision. This effects and shapes communities for better or worse (Groppel 2011). The model includes the following four dimensions: perceived susceptibility, perceived severity, perceived benefits and perceived barriers (Janz & Becker 1984). A community’s cue for action is based upon perception or by learning about the threat. Behavior is evaluated based on an estimate of
the potential benefits of an action to reduce susceptibility or severity. The identified benefits are then weighed against perceptions of physical, psychological, financial, and other costs or barriers inherent in the effort (Mullen et al. 1987, Janz & Becker 1984). The City of Portland has an ongoing commitment to educating people about the importance and value of resiliency planning. “The community members get it and the council members get it but if you have your choice between doing a Neighborhood Plan and looking at this issue [of post-peak oil and climate change action planning] or hiring three (3) more police officers, what do you do? So being able to help decision makers see the value in this planning approach is hard and a continuous educational effort” (Anderson 2014). Economic concerns mean having a very specific plan that is easy to understand and is very accurate and therefore credible. This is very important so that municipalities know where to target. Specifically tailoring plans to the community and its unique vulnerabilities and areas for improvement is important (Anderson 2014).

**Supporting Factors**

Identified supporting factors from the content analysis/analytic induction of the Ventura results are outlined below with a discussion linking the City of Portland’s experience and literature to key findings within the research process.

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<th>Ventura Supporting Factors</th>
<th>Did Portland Address?</th>
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Table 13: Supporting Factors – City of Portland & Literature
Benefits

Implementing coastal community resilience planning principles will have multiple benefits across sectors in the form of higher quality of life and personal and family health and enrichment (Beatley 2009). Even the interviewees for this study who believe that climate change is a farce, believe that thoughtful common-sense management of natural resources is the right thing to do for the City of Ventura. Whether or not the impacts of post-peak oil and climate change are as severe as they can be for Ventura, the collateral benefits of being prepared and increasing community capacity for adaptation is important (Masterson et al. 2014, Newman et al. 2009, Hopkins 2008).

The goals around peak-oil and climate change planning can be very specific as to reduce greenhouse gas emissions and/or oil use, and the way that these goals can be achieved also have a host of other benefits, including creating a resilient community while at the same time creating more jobs, more green space, healthier lifestyles, cleaner air quality and a more socially connected and invested community (Anderson 2014). The education of these collateral benefits can be disseminated through the community extension program, given its goal to educate and address local issues through local experts (Brugger & Crimmins 2015, Bowling & Brahm 2002). Further understanding of how to reach community members is through understanding the behavioral change models of Bandura’s Social Learning theory and the Health Belief model. Social Learning theory suggests that individuals learn by doing and by observing others in social contexts (Bandura 1971). The Health Benefit model shows that individuals are likely to alter their behavior and lifestyle based upon a perceived threat and the potential benefits of actions to reduce their susceptibility or severity to those identified threats (Mullen et al. 1987, Janz & Becker 1984). If the City of Ventura educated the community about the perceived threats of post-peak oil and climate change, and focused on the multitude of collateral benefits for taking action to reduce vulnerability and increase adaptation to these threats, the implementation of a post-peak oil and climate change community action plan could be very successful.
Community Participation

As mentioned previously, historically, the City of Ventura’s civic engagement efforts have been successful with high levels of community participation. The City of Ventura’s Ventura Vision (2000) and Ventura General Plan (2005) were the products of successful community participation. Ventura is home to an educated and involved community, which can greatly benefit the implementation of a post-peak oil and climate change community action plan. As Ajzen and Fishbein’s Theory of Planned Behavior or Reasoned Action describes, people are only willing to participate and work as hard towards something that they believe will provide the outcome in which they desire (Ajzen 1991, Mullen et al. 1987, Ajzen & Fishbein 1980). If the community feels invested enough in civic engagement processes, they are likely to be motivated to exert the effort necessary to participate in moving implementation forward (Ajzen 1991).

Public participation is essential to the success and implementation of a resilience plan for post-peak oil and climate change (Newman et al. 2009, Wates 2000). With community participation, the community is more inclined to support the long-term vision and implementation to achieve its goals (Newman et al. 2009). Both the theory of planned behavior or reasoned action, and the self-efficacy models support the behavior of individuals willing to invest time and energy based on both how much they believe in the process and by how much they believe they can have an effect on producing their desired outcomes (Ajzen 1991, Bandura 1991, Bandura & Ozer 1990, Mullen et al. 1987, Bandura 1982, Ajzen & Fishbein 1980, Bandura 1977).

Community-based adaptation, which is locally focused, participatory, and draws on the normative preferences and knowledge of local people, is promoted as a successful approach to community participation in resiliency planning (Measham et al. 2011). The community extension program model is an example of how a locally focused effort, interacting with local residents as a public service mission to educate and address local issues by local experts, can be utilized in the City of Ventura’s effort for the successful implementation of a post-peak oil and climate change community action plan (Brugger & Crimmins 2015, Milburn et al. 2010, Bowling & Brahm
2002, Baker 1989, Rolls et al. 1986). Communities that have a rich and diverse stock of networks and civic associations are less vulnerable to shocks, and can more easily tackle problems as they arise (Hopkins 2008, Scheffert et al. 2008). This type of a community-based, bottom-up planning approach has been recognized to be more sensitive to the local characteristics of a given problem and is thus better able to inform an appropriate approach to an action planning process (Hopkins 2008). Community participation develops local ‘ownership’ of problems and the activation of solutions (Prashar et al. 2013, Measham 2011, Beatley 2008, Hopkins 2008, Scheffert et al. 2008, Bowling & Brahm 2002).

The City of Portland had over 17,000 community members submit comments and participate in the civic engagement process for the development of The Portland Plan (2012) thus providing a high level of community ownership and buy-in to, not only the process, but the outcome of the planning document and how it gets implemented (Anderson 2014).

A more bottom-up planning approach is thought to lead to more legitimate processes and effective outcomes than a top-down approach which is perceived to isolate some stakeholders due to externally generated interests and agendas (Measham 2011). The Transition Initiatives model provides a framework for an equitable bottom-up and top-down approach to planning for the twin challenges of post-peak oil and climate change (Hopkins 2008).

Planning & Design

Measham et al.’s (2011) study based on interviewing three municipalities in Sydney, Australia concluded that “…overall there was a pervasive recognition of [peak oil and] climate change as at least relevant for planning processes to consider, and hence there was sufficient recognition of the issue for it to be pushed into the planning agenda” (Mesham et al. 2011, pg. 900). The study also identified a key component to as improving the information base for key adaptation issues, such as working closely with climate scientists to provide access to the best available science to generate locally relevant estimates of potential risks. The more specific the information, the more powerful it becomes in terms of making a case for adaptation through
resiliency planning (Mesham et al. 2011). Local community extension programs provide a structure for a local network to share knowledge and specific information that can aid a community to better position itself for successfully implementing a post-peak oil and climate change community action plan (Brugger & Crimmins 2015). By focusing on local knowledge, a community builds its capacity to create change through validating local experience and integrating inclusive participatory processes within community extension programs (Scheffert et al. 2008). Having a plan for resiliency provides a community with the capacity to successfully implement adaptation and sustainable living approaches while being prepared to deal with the resulting changes that uncontrollable and significant disturbances like storms, floods, droughts and tsunamis can create (Saavedra & Budd 2009).

Resilience planning for post-peak oil and climate change can provide a package of reinforcing plans and implementation tools, a mix of the existing conventional tried-and-true, such as community land use plans (General Plans), and the new and innovative (Transition Initiatives), such as more resilient small-scale distributed and decentralized systems for power generation and low-impact development techniques (Beatley 2009). Local government planning sectors that hold the capacity to contribute to the success of post-peak oil and climate change action planning are strategic planning processes and land use planning (Measham 2011). The City of Ventura has the opportunity to integrate resiliency strategies of a post-peak oil and climate change community action plan into the city’s main policy driven platform of the general plan. Updated every ten (10) years, the infusion of resiliency and adaptation guidelines and principles for adapting to post-peak oil and climate change into the City of Ventura’s general plan is the first step in reducing vulnerability and increasing community capacity to successfully implement a community action plan. Strategic planning fosters community vision, aspiration goals and connection to place, along with defining pathways to achieve these goals (Measham 2011). Strategic planning for post-peak oil and climate change begins with a scenario planning process aimed at creating a foundation for long-term development and goals (Larsen &
Gunnarsson-Ostling 2009). Various impact, vulnerability and adaptation assessments have used climate scenarios to inform successful resilience and adaptation planning on local scales (Dessai et al. 2005). Scenario planning helps break the constraints on traditional strategic practices, as it enables those involved to discuss the complexity and ambiguity of their perspectives in a wide context thus promoting action and ownership of the strategy process (Ringland 1998). Land use planning is focused on the allocation of space to balance economic prosperity with acceptable living standards and the conservation of natural resources (Masterson et al. 2014, Beatley 2009, Newman et al. 2009). These types of planning are highly important to post-peak oil and climate change adaptation planning and contribute to achieving resiliency at the local level (Measham et al 2011).

Gaps in the planning process identified by the City of Portland resulted in merging the Planning Department with the Office of Sustainable Development to better meet the needs of its visioning and general plan directives for a more sustainable community. Instead of creating a specific stand alone plan for peak oil and climate change, it was better implemented by integrating planning for post-peak oil and climate change into not only the city’s general plan, but also into the economic plan and the hazards mitigation plan (Anderson 2014). While updating the various plans within the overarching comprehensive plan, or general plan, for the City of Portland, the Bureau of Planning and Sustainability integrated the main components from its climate action plan into the comprehensive plans. So rather than local government departments working in their various silos, which both demands the desire and the time to meet with all departments, a local unit of leadership functioned more efficiently. More often than not, all departments embraced the action plan outcomes and goals, however they may not have the time to integrate it into their various plans. So staff from the Bureau of Planning and Sustainability at the City of Portland found that if they went to the various departments, instead of asking them to come to their planning efforts, and proactively worked with the various staff to become a part of their planning process in order to integrate action plan measures efficiently in reaching resiliency.
goals was improved and it was much more effective in producing collaboration and integration across departments (Anderson 2014). This supports the findings in Measham et al. (2011) that suggests “…knowledge and responsibility for tracking and responding to [post-peak oil and] climate change is not evenly distributed across local government departments” (Measham et al. 2011, pg. 901). Interviewee E also touched on this type of an approach to planning when they suggested that instead of dividing up the plan into priority areas, instead it should be divided by departments so that Ventura local government could implement action measures specific to their area of operation and overall community influence.

…if we had some sort of…manual that we could…either import some of the stuff into the [zoning] code, or having a separate manual that we would apply to our development review process that would allow us to say to someone really early on ‘you are proposing something that you have to apply these features or principles to your design. It could be a guiding document…guiding principles [that] direct staff to apply them. Or we could actually amend it into the code completely. Our parking requirements are in the code; our height requirements; our landscaping requirements are in the code; if we could just recalibrate all of those to address sort of climate change issues…number one, it would be in the code so it would have teeth. We don’t really have codes towards minimizing climate change impacts, so that would be another chapter of the code that would have a whole new services of regulations that could either be a codified thing that was actually formally adopted and had no flexibility or could just be a guideline that says ‘these are principles important to the city of Ventura. Even if they want codified [requirements] on every project we have to go to the commission and say ‘this project meets the height requirements, has enough parking, meets the set-back requirements AND it meets 80% of these climate change principles’ if we were forced to make that part of our [code approval] evaluation. Right now, we apply lots of design principles and that’s all-important from a livability perspective in the way we do codes but it doesn’t necessarily…get to this. The better the urban fabric of a development the more likely people are going to find some other way to get around. So it brings us there but it doesn’t take us as far as we could go if we had that next level of detail (Interviewee E 2010).

Portland has been planning and doing mitigation for over 20 years, but adaptation is what is getting everyone’s attention. Currently in the fields of emergency preparedness and emergency management, resilience is the major theme. Climate change was not a major driver previously, but now as we learn about it and its implications, there are efforts to reduce greenhouse gases and prepare to adapt to the impacts of a changing climate and different energy use habits (Anderson 2014).
Implementing community action plans relies upon local knowledge and helps build strong networks within the local community (Prashar et al. 2013, Hamdi & Geothert 1997). The City of Portland asked, “how can we do a comprehensive plan (general plan) if we don’t know what the whole strategy for the whole city is?” So they embarked upon an enormous public visioning process for several of years with over 17,000 community members participating, in order to determine what the city really cared about. Clearly this showed the Self-Efficacy Belief system within the Portland community as their actions to participate showed their motivations for the outcome of creating change in their community (Bandura 1999). The outcome was distilled into The Portland Plan (City of Portland 2012) and highlighted four areas of focus: prosperous, educated, healthy and equitable. Instead of land use housing and transportation, these four areas were the driving force behind the update of the city’s comprehensive general plan (Anderson 2014). The outcome was the development of twelve (12) metrics they believed would result in what they call Healthy Connected Neighborhoods where 80% of community members would live in neighborhoods that provide all necessarily services within a 20-minute walk or bike ride while mass transit would be accessible to get to further destinations for work and other needs. The Ventura Post-Peak Oil Vision Plan identified and encouraged this approach to neighborhood planning and should be integrated into the city’s general plan.

**Politics**

Having a local champion within the local City of Ventura government is important in moving resiliency planning for post-peak oil and climate change forward. With the impacts experienced locally, geographic variability in climate impacts emphasizes the need for place-based approaches to vulnerability analysis and adaptation. Local governance systems are often seen as the responsible and legitimate entity for managing such impacts (Measham et al. 2011).

Our findings emphasize the role of leadership support for adaptation in the propensity to respond to climate change through local planning. It is important to recognize that allocating adequate resources and setting goals is strongly tied to the platforms of elected officials, which means that the support, or lack of it, from political leaders can enable or stifle climate adaptation at the local scale.
Some local leaders are pushing for action whilst others are stalling based on claims of inadequate information, or denying the need for local adaptation in the face of other interests. Where local leaders considered climate change [and peak oil] to be pressing issues, resources were available and information needs were addressed. Above all, support from senior leaders is necessary to develop a coordinated approach to climate adaptation [and resiliency] through implementing relevant tools and processes across internal divisions (Measham et al. pg. 906).

In theory and practice, local government is identified as the closest level of government to community action. It is the scale at which the majority of development applications are processed, where most waste is managed and the health of the population is monitored (Prashar et al. 2013, Beatley 2009). With this in mind, it is clear that what has moved the City of Portland to the forefront of post-peak oil and climate change action planning is that they have had a local champion within government throughout the entire 20-year planning process to help facilitate and keep resiliency planning moving forward (Anderson 2014). At the time of the Ventura Post-Peak Oil Vision Plan, the City of Ventura had a champion within local government but he has since left the city council. It is unclear who is or will be the next champion within the City of Ventura local government to carry the torch forward.

*Infrastructure*

Improvements for, and offering easy access to, alternative transportation options generate a sense of hope and pride in a community, along with making active participation for implementing an action plan easier for the public (Newman et al. 2009). Electric rail systems offer not only a better way to make a city function without oil but a market-oriented way to restructure the city in its land use patterns to be less car dependant (Newman et al. 2009, Lerch 2007). In some cases, it could be more cost-effective to implement adaptation and mitigation measures early on, particularly for infrastructure with long economic life, or if current activities may irreversibly constrain future adaptation to the impacts of peak oil and climate change (IPCC 2007). Measham et al. (2011) identified three (3) specific areas in which local government needs
to show leadership to adequately plan and adapt to the challenges of post-peak oil and climate change.

1. Move beyond mitigation to include a focus on adaptation in practical and action oriented terms.
2. Push for reform at higher levels of government to enable changes in planning frameworks, which currently hinder local adaptation.
3. Embed post-peak oil and climate change adaptation into a wider range of local government functions and departments (Measham et al. 2011).

The City of Ventura’s infrastructure for alternative transportation options is less than ideal and needs to be made a priority within local government leaders and staff. Based upon data collected through semi-structured interviews with Ventura community members and local governmental staff, the city is not showing leadership in the three (3) specific areas Mesham et al. (2011) outlines above and is therefore not adequately planning for adaptation to the challenges of post-peak oil and climate change. The City of Ventura clearly has the capacity to meet these leadership needs though a political champion needs to come forward.

Economics

Although the results from this study did not identify specific funding options to support resiliency planning for post-peak oil and climate change implementation, there are a variety of international level adaptation finance mechanisms established through the United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol including the Global Environmental Facility Trust Fund, the Special Climate Change Fund, and Least Developed Countries Fund and the Adaptation Fund (Measham et al. 2011). Even with some municipalities taking a substantial step to invest in developing and implementing resilience plans for post-peak oil and climate change, there are further questions on how to finance adaptation actions and implement the changes to planning frameworks (Measham et al. 2011). Money is necessary to implement any type of plan, yet the City of Portland predominantly did not use any of its General Fund toward its planning efforts. 90% of the City of Portland’s plans were funded without city money, but instead found money from grants, foundations and joint partnerships
including utilities (Anderson 2014). The City of Ventura could easily follow this model of securing grant funds to help offset planning and implementation costs for a post-peak oil and climate change community action plan.

**Summary**

The process of identifying the opportunities and constraints associated with implementing a community action plan for post-peak oil and climate change through barriers and factors has shown that although there are many challenges to plan for and overcome, there are many supporting factors that either exist currently or can be employed to further ensure a successful transition from planning to implementation. Below is a list reviewing the identified tier 1 barriers and supporting factors.

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<td>Consequences/Rules/Laws/Rewards</td>
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Table 14: Tier 1 Barriers and Supporting Factors

Major barriers that have been identified for the City of Ventura in implementing a post-peak oil and climate change community action plan are: educating and raising the awareness of the community around peak oil and climate change planning; not having a champion in local government to create a sense of urgency to direct staff and allocate resources to the effort; the existing policy-guiding general plan for the city does not have specific integrated guidelines or codified codes that reflect resiliency and adaptation planning for post-peak oil and climate change; infrastructure required to provide the community with alternative transportation options does not exist for facilitate the implementation of a resiliency action plan; overcoming the inertia
of existing lifestyles and unsustainable culture; a lack of funding being allocated to adaptation planning and implementation with competing priorities.

Major supporting factors that have been identified for the City of Ventura in implementing a post-peak oil and climate change community action plan are: collateral benefits from planning for and implementing resiliency and adaptation community action plans; high level of community participation amongst the community of Ventura to help aid a bottom-up approach to resiliency and implementation; by integrating post-peak oil and climate change community action plan guidelines and principles into the City of Ventura’s existing plans and planning process, like the general plan update, would pave the way for successful implementation; having a local political champion step up and carry the torch for moving resiliency planning for the City of Ventura forward would support allocating resources required and increase community capacity for successful action plan implementation. The City of Ventura can look to examples of effective resiliency planning both nationally (especially the City of Portland) and internationally (Vancouver, Denmark, Finland) to find processes and solutions for success in moving from planning to implementation of a post-peak oil and climate change community action plan.
CHAPTER 7: CONCLUSION & RECOMMENDATIONS

Based on the results from this research on the study of factors and barriers affecting a post-peak oil and climate change community action plan for the City of Ventura, it is clear there is agreement that the concept of planning for the implications of post-peak oil and climate change is important, however support for developing, adopting and implementing action planning around peak oil and climate change for the City of Ventura was met with some degree of indifference. This result is due to an array of identified barriers including lack of funds, limited staff, lack of direction, political will and overall fatigue. The outcome of the analysis shows that by integrating post-peak oil and climate change planning guidelines and principles into the City’s policy guiding General Plan would carry the greatest impact for success and overall implementation (Anderson 2014, Masterson et al. 2014, Prashar et al. 2013, Measham et al. 2011, Beatley 2009, Newman et al. 2009).

There are clearly many identified barriers to overcome, such as the financial undertaking of committing to such an effort while there are many other competing priorities within the community (Anderson 2014, Measham et al. 2011, Saavedra & Budd 2009). But other barriers such as gaining the participation and support of the public by increasing the community’s awareness and overall capacity to understand the complex issues of peak oil and climate change, and the overall collateral benefits of implementing a community action plan are also important (Anderson 2014, Prashar et al. 2013, Measham et al. 2011, Shapiro 2011). By looking at the models for individual and community behavioral change reviewed in this research (Theory of Planned Behavior or Reasoned Action, Social Learning Theory, Self-Efficacy model, Health Belief model, PRECEDE model and Community Extension programs) can help to inform ways in which educating and gaining the public’s support can take place (Brugger & Crimmins 2015, Groppel 2011, Milburn et al. 2010, Scheffert et al. 2008, Clarke 2003, Bowling & Brahm 2002, Nutbeam 2000, Bandura 1999, Ajzen 1991, Bandura & Ozer 1990, Baker 1989, Whale 1989, Mullen et al. 1987, Rolls et al. 1986, Janz & Becker 1984, Bandura 1982, Ajzen & Fishbein 1980, 192
Bandura 1977, Bandura 1971). Initiatives do not have to be branded as a *Post-Peak Oil and Climate Change Plan*; they can be just as effective integrated into the General Plan or another forum that does not evoke skepticism, complacency and denial (Measham et al. 2011). Civic support, buy-in and passion for a healthy and prosperous community economy, culture and natural resource management can be created through education, pilot projects and incentive programs (Anderson 2014, Prashar et al. 2013, Measham et al. 2011, Hopkins 2008).

The Community Action Plan should be as credible, measurable and incremental as possible (Anderson 2014). It must be achievable with clear goals, objectives and milestones, which have been developed through overwhelming community involvement and buy-in (Anderson 2014, Masterson et al. 2014, Shapiro 2011, Newman et al. 2009). A new civic engagement and participatory process needs to be implemented to determine the vision of a post-peak oil and climate change future of the current Ventura community and its political leadership. Additionally, successful implementation will result from a planning approach that includes just as much of a bottom-up participation and overall ownership of the process by community members, as a top-down approach with political support that includes a leadership and funding (Brugger & Crimmins 2015, Anderson 2014, Milburn et al. 2010, Blackburn & Flaherty 1994). The Transition Initiative planning process is an excellent example of this type of bottom-up meets top-down approach to creatively increase a community’s capacity for adapting to the effects of post-peak oil and climate change (Hopkins 2008).

As a coastal community, there are added vulnerabilities that peak oil and climate change pose to the City of Ventura such as the implications of sea-level rise including its valuable beach-front real-estate, civic infrastructure such as the waste water treatment plant, and two big economic drivers: beach-based tourism, and the Ventura Harbor with its commercial fishing industry (Masterson et al. 2014, Blakely & Carbonell 2012, Beatley 2009). Collaboration with and utilization of resources on a regional scale can foster greater resilience for the City of Ventura, while potentially attracting higher levels of state and federal funding, all while
positioning the City of Ventura as a leader and model for coastal community resilience planning in the face of peak oil and climate change (Masterson et al. 2014, Beatley 2009, Newman et al. 2009). With this said, an action plan needs to be as unique to the identity and vernacular of the City of Ventura as possible, thus providing further support for it to be adopted and integrated into the City’s guiding General Plan (Anderson 2014, Measham et al. 2011).

The bottom line is that City of Ventura leadership will need to make this a priority, which means finding and devoting the resources required to create, adopt and implement a successful post-peak oil and climate change community-based action plan (Anderson 2014, Newman et al. 2009). This includes working with and providing empowerment for local community groups to take ownership of the joint bottom-up and top-down process (Measham et al. 2011, Hopkins 2008). This is an investment in the overall capacity of the community for resiliency in the face of any disaster or shock to the community-scale system (Masterson et al. 2014). It will go beyond the obvious physical benefits to the community if this effort is viewed as not just about peak oil and climate change, but about the health, vitality and strength of the City of Ventura to withstand and adapt to any unforeseen circumstance that an unknown future scenario may hold in store (Anderson 2014, Beatley 2009, Schwartz 1991, Wack 1985a). This starts with community-based education and awareness such as utilizing existing community extension programs (Brugger & Crimmins 2015, Milburn et al. 2010), but more importantly, it begins with the leadership and political will required to make the community and its people who compose it what it is, a priority. There is no better time then now.

**Recommendations**

Recommendations from this study are presented in two areas that show the most promise in advancing the success of planning implementation for post-peak oil and climate change for the overall community of Ventura, which are the fields of local government and non-profits or local activists and community organizers.
Local Government

1. Find, Allocate & Commit Funding

Without a commitment to find sources of funding and to allocate those funds to prepare and adapt to post-peak oil and climate change, the City of Ventura remains vulnerable to the substantial impacts coastal communities face. A leader in local government is needed to educate staff and council to ensure procurement of proper funding from grants and foundations and make the resiliency of the community a priority.

2. Identify and Encourage Leadership

It is essential to have either staff or council member(s) provide leadership and awareness for the importance of this work. These political champions will demonstrate to the community that local government prioritizes the future of the community, but will also help to secure funding for the planning and implementation process.

3. Integrate Post-Peak Oil & Climate Change into the General Plan

Comprehensively integrating post-peak oil and climate change resiliency measures and planning guidelines into all aspects of the existing city’s policy guide, or General Plan, will provide leverage and commitment for implementing action measures on land use planning, transportation planning and building or development code/permit approval.

- Identify and compile elements needed for a comprehensive post-peak oil and climate change action plan unique to the City of Ventura.
- Inventory all current city plans and identify relevant post-peak oil and climate change planning components.
- Cross analyze related elements from existing city plans with those needed for a complete action plan to identify commonalities and gaps that need to be addressed and developed.
- Develop recommendations for moving forward with implementing identified gaps while also identifying responsibilities for current and pre-existing elements and initiating accountability for their completion.
4. Departmental Integration

A commitment to break down the ‘silo’ effect within local government departments and divisions to further facilitate the integration of post-peak oil and climate change community action plan guidelines and principles into every facet of government operations is necessary. This will not only help facilitate the increase in capacity of local government for resilience, but will reflect throughout the community at large, resulting in a community-wide increase in capacity for resilience.

5. Community-Wide Participatory Processes

A robust campaign of participatory processes is needed to provide the foundation for a clear community vision and create inherent community investment and public buy-in to the plan and its subsequent implementation (Anderson 2014, Nutbeam 2000, Bandura 1991, Mullen et al. 1987). This should include complete transparency to create public support and to facilitate trust between the community and local government.

6. Education & Awareness

Substantial resources need to be utilized toward a robust education and outreach campaign to increase the awareness capacity of the community regarding the impacts of not just post-peak oil and climate change, but lifestyle and behavioral patterns. A focus on how to change lifestyle and behavior patterns is most important in order to benefit individuals and the community as a whole.

7. Empowering Community

Local government should directly encourage community members, groups and local neighborhood councils to get involved and take action to co-create the future community in which they want to live. Pilot projects put on by the City of Portland provided an opportunity to build awareness, interest and overall community capacity but also created political support when they were viewed as a success (Anderson 2014). This can also be done by developing reward and
incentive programs to help increase participation and to facilitate behavioral change that best reflects the goals set forth within the post-peak oil and climate change community action plan. Direct involvement of the community in feedback loops to further facilitate community-wide buy-in on the action plan’s success is important for measurement of its agreed upon metrics.

**Non-Profits, Activists & Community Organizers**

1. *Engage in a Mutual Bottom-Up & Top-Down Approach*

   Local organizations, including neighborhood councils, should become more organized at a grassroots level and engage with local government. An example of this would be to form a Ventura Transition Initiative by gaining community-wide participation to better reflect the community identity as a whole in order to utilize Transition Initiative resources and organizational structures to interface and collaborate with local government to ensure resiliency is integrated into all aspects of civic functions with community representation.

2. *Community Leadership*

   The community at large needs a champion to provide leadership on resiliency issues. A widely respected community member (or members) who can initiate civic engagement amongst their fellow community members while encouraging passion for the issues at hand is needed. Non-profits can function to bring people together and initiate participation around common issues, while helping to facilitate a collective approach to developing solutions and bridging the gap between the community and its local government.

3. *Community Participation*

   A community leader can provide the face of the community, but the community at large needs to participate in order to develop the true identity of the community. A community must participate and be engaged in order for the local government to take notice and to understand what the community image and culture is. This allows better determination of the best way to move forward in meeting a community’s needs appropriately. Community participation in events
to raise awareness and plan is essential to building momentum and move the planning and implementation process forward with community buy-in and support of the outcomes.

Community participation in rewards and incentive programs also shows local government that there is a need and a willingness to change behavior and lifestyle with the right encouragement.

4. **Educate and Increase Awareness Within the Community**

   Local non-profits and community organizers in Ventura already have the network base to help disseminate information. By holding educational opportunities for the community to inform them about the issues and potential impacts that can affect them and their families for generations to come, non-profits can increase awareness of plans, the planning process and implementation, and help build an understanding of the basic concepts and risks of peak oil and climate change. Understanding how and where the potential risks are concentrated within the community can create opportunities for individual behavior and lifestyle changes to be further understood and changed to build individual and community capacity for resilience.

5. **Build Partnerships**

   Identifying existing community assets for partnerships can inherently and instantly increase community capacity. For example, as the literature on extension programs shows, despite the challenges they face, their existing structure is conducive to quickly disseminating information throughout a community or region, and for building capacity through local knowledge (Brugger & Crimmins 2015, Milburn et al. 2010, Bowling & Brahm 2002). The inherent trust of local experts has the potential for assisting the community of Ventura to successfully implement a post-peak oil and climate change community action plan.
Further Research

This research topic can be explored further through identifying exactly where and how post-peak oil and climate change community action planning guidelines and principles can and should be integrated into municipal guiding framework for planning, such as a General Plan or a Comprehensive Plan. Further national and international models for this planning and integration should be examined and correlated. Municipalities in Canada, Europe, and Australia have grappled with these issues and can provide insights and models for making change (Anderson 2014, Measham et al. 2011). The City of Ventura’s current plans and frameworks should be reviewed for common components and inventoried. Beneficial future research to identify how to integrate all aspects of post-peak oil and climate change resiliency action planning throughout all departments and divisions of local government is critically needed, and can help extend the research within this study. In addition, further research on the local vernacular understanding of the risks of post-peak oil and climate change and the benefits of addressing them is needed. Since the research for this thesis focused on the understanding of 15 experts and officials in the City of Ventura, a researched understanding of the vernacular or popular understanding and conception of the issues of post-peak oil, climate change and resiliency for the City of Ventura is also needed.
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APPENDIX A

Institutional Review Board (IRB) Approval

State of California

Memorandum

California State Polytechnic University, Pomona
Office of Research

Date: March 25, 2010

To: Tyrone LoFay
   Environmental Design, Landscape Architecture

From: Dr. David M. Adams
   Chair, IRB (Human Subjects Protection Committee)

cc: IRB file
    Susan Mulley PhD

Subject: Protocol number 10-000

Your de novo protocol entitled "Factors Affecting a Post-Peak Oil and Climate Change Action Plan for the City of Ventura, California" has been reviewed by the Cal Poly Pomona Institutional Review Board (IRB) by the expedited process. It was found to be in compliance with applicable federal and state regulations and Cal Poly Pomona policies regarding the protection of human subjects used in research. Thus, the Cal Poly Pomona IRB grants you approval to conduct the research. On its behalf, I thank you for your adherence to established policies meant to ensure the safety and privacy of your study participants. You may wish to keep a copy of this memo with you while conducting your research project.

You may initiate the project as of March 25, 2010, and it must be completed by March 24, 2011. Federal regulations limit the IRB approval of studies for up to one year. If you find the need to renew your protocol, please remember to submit a request to the IRB at least six (6) weeks before this end date to ensure continuous human subjects' protection and IRB approval. It would be appreciated that you advise the IRB upon the completion of your project involving the interaction with human subjects.

Approval is conditional upon your willingness to carry out your responsibilities as the principal investigator under University policy. Your research project must be conducted according to the methods described in the final approved protocol. Should there be any changes to your research plan as described, please advise the IRB, because you may be required to submit an amendment. Additionally, should you as the investigator or any of your subjects experience any "problems which involve an undescribed element of risk" (adverse events in regulatory terms), please immediately inform the IRB of the circumstances.

If you need further assistance, you are encouraged to contact the IRB administrator, Bruce W. Kennedy MS RLATG CIMAR CPIA at 909-869-4215.

The committee wishes you success in your research endeavors.

David M. Adams PhD MLS (law)
Professor, Philosophy
Chair, Department of Philosophy
College of Letters, Arts, and Social Sciences
Director, Institute for Ethics and Public Policy

Pfostfeldkoff Assurance 020017/96
IRB principals: respect for persons, beneficence, and justice
version 5 Feb 10

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APPENDIX B

Interview Invitation Letter

Dear {Participant},

I would like to invite you to participate in a precedent setting study, aimed at moving the City of Ventura to the forefront of building a truly resilient community.

I am a Landscape Architecture graduate student at Cal Poly Pomona and have been working with Council Member Brian Brennan. Building off of the Post-Peak Oil Vision Plan that was done for the City of Ventura by the 606 Studio at Cal Poly Pomona in 2007, I am pursuing a thesis project researching factors that influence the implementation of a Post-Peak Oil & Climate Change Plan. My goal is to utilize the outcome of this research to help develop a Community Action Plan for the City of Ventura, to build capacity for resilience in an ever changing and uncertain future.

I am collecting data through semi-structured interviews. Basically, I am asking that you sit down with me for 20 - 30 minutes and answer/chat about some of my questions aimed at identifying these factors specific to Ventura. Your responses will be kept strictly confidential.

There are a number of people that I am working to get time with to interview. So, with this in mind, I’d like to cluster the interviews as much as possible. Please choose from the following time windows, and note which day you would prefer, as well as either in the morning, afternoon or evening.

[INSERT DATES HERE]

Once I hear back from you, I will draft up a schedule and let you know when we will be conducting our interview.

Thank you very much in advance for your time in participating in this important work to create a more sustainable future for Ventura. Please don’t hesitate to contact me with any questions. I look forward to hearing from you!

Sincerely,

Tyrone LaFay
MLA Candidate
Department of Landscape Architecture
College of Environmental Design
California State Polytechnic University, Pomona
Email: biotribecascadia@yahoo.com
Phone: 909.802.9177
APPENDIX C

Informed Consent Form

California State Polytechnic University, Pomona

Informed Consent Form for Research Involving Human Subjects

You are being invited to participate in a research study, which the Cal Poly Pomona Institutional Review Board (IRB) has reviewed and approved for conduct by the investigators named here. This form is designed to provide you - as a human subject - with information about this study. The Investigator or his/her representative will describe this study to you and answer any of your questions. You are entitled to an Experimental Research Subject’s Bill of Rights and a copy of this form. If you have any questions or complaints about the informed consent process of this research study or your rights as a subject, please contact the Compliance Office within Cal Poly Pomona’s Office of Research at (909) 869-4215.

Project Title: Factors Effecting a Post-Peak Oil and Climate Change Action Plan for the City of Ventura, California

Protocol #: 10-060

Principal Investigator: Tyrone LaFay, MLA Candidate (email: telafay@csupomona.edu; phone (909) 802-9177) with Professor Susan Mulley, Ph.D. (email: sjmulley@csupomona.edu; phone (909) 869-6712).

This study attempts to identify factors effecting the implementation of a post-peak oil and climate change plan for the City of Ventura, California. You will be asked a series of questions designed to direct the identification of such factors. These questions will be asked in a semi-structured interview format, as to guide the topics of conversation, where your elaborated opinions are welcomed. The process should only take about an hour of your time and we do not anticipate you experiencing any discomfort or other negative feelings when responding to the questions in this study. The semi-structured interview will be audio recorded for further analysis. Transcripts of the interview will have your name and position removed and when information from the interview is used in the study we will remove any information which might identify you.

Your participation in this study is completely voluntary. Should you decide to discontinue participation, you may do so without penalty. You may also skip any question you do not wish to answer. Your participation in this study may help you understand the nature of social inquiry. It may also help aid in the development of an action plan where the City of Ventura can implement sustainable strategies to be prepared for the effects of peak oil and climate change for future generations to come.

Should you have any further questions, please feel free to contact the study’s principal investigator, Dr. Susan Mulley, a professor in the Landscape Architecture Department. Her office number is 7 – 227, her office phone number is (909) 869-6712, and her email address is sjmulley@csupomona.edu.
CONSENT STATEMENT:

I, __________________________________, hereby give my consent to participate in the research study entitled “Factors Effecting a Post-Peak Oil and Climate Change Action Plan for the City of Ventura, California.” I have read the above information and am aware of the potential risks and complications. I fully understand that I may withdraw from this research project at any time or choose not to answer any specific questions without penalty. I also understand that I am free to ask questions about techniques or procedures that will be undertaken. I am aware that there is no compensation for my participation. Finally, I understand that information obtained during the course of this study will be kept confidential.

__________________________________________  __________________________________________
Subject Signature/Date  Primary Investigator/Date
Research Question:
WHAT FACTORS INFLUENCE THE IMPLEMENTATION OF A POST-PEAK OIL & CLIMATE CHANGE PLAN FOR THE CITY OF VENTURA, CALIFORNIA?
This is an inductive study - Interviewing stakeholders to find out what factors may influence the implementation of a post-peak oil & CC action plan.

Semi-Structured Interview Questions

1) **How** important is it that the community of Ventura prepares for PPO & Climate Change?  
   **Why** do you think.....?

2) What are the **benefits** of a PPO & CC plan for the Ventura area?  
   What do you think the **disadvantages/negatives** might be?

3) a. What are the **barriers** to the implementation of a PPO & CC plan?  
   b. What are the **factors that would contribute** to the implementation of a PPO & CC plan?  
   c. Out of what you just listed, which/what **are the most important factors** that will influence the implementation of a PPO & CC Vision Plan?

4) **Is it important to engage the community** and get them involved in a PPO & CC Action Plan?  
   **How** do you best see engaging the community of Ventura in getting them to take action?

5) **What’s the best approach to assisting the community** of Ventura in altering their lifestyle & behavior patterns to more sustainable ways?

6) What are the **implications of PPO & CC for the Ventura area**?  
   What is the **level of concern** of these implications?  
   -Local Government?  
     If yes, what does that mean...what does that look like, what are they developing as a response?  
   -Among other organizations within the community?  
   -Community members in general?

5 MINUTES EACH QUESTION    (20-30 Minutes Total)
The United States Environmental Protection Agency (EPA) regulates greenhouse gas (GHG) emissions by way of the United States Clean Air Act (CAA). These actions include:

- **Collecting Emissions Data**: Through the Inventory of U.S. Greenhouse Gas Emissions and Sinks program that has tracked and reported annual U.S. greenhouse gas emissions since 1990. The EPA also runs a Greenhouse Gas Reporting Program that collects and publishes emissions data on individual facilities that emit GHGs in large quantities. This data helps policy makers, businesses, and the EPA track GHG emissions trends and identify opportunities for reducing emissions and increasing efficiency.

- **Regulatory Initiatives**: That reduce GHG emissions and promote a clean energy economy. These common-sense regulatory initiatives develop standards for GHG emissions from mobile and stationary sources under the CAA.

  **Mobile Source Regulations Include:**
  - Light-duty vehicle GHG National Program, and Heavy-duty engines and vehicles National Program. These programs reduce GHG emissions through improved fuel use of on-road vehicles and engines.
  - The Renewable Fuel Standard (RFS) regulations ensure that transportation fuel sold in the U.S. contains a minimum volume of renewable fuel. The RFS program lays the foundation for achieving significant reductions of GHG emissions from the use of renewable fuels, for reducing imported petroleum, and for encouraging the development and expansion of the renewable fuels sector.
  - In June 2009, California was granted a CAA waiver of preemption to implement its own GHG emission standards for motor vehicles.

  **Stationary Source Regulations Include:**
  1. **Carbon Pollution Standards for Power Plants** was issued in 2014 by the EPA to cut carbon pollution from existing power plants, the largest source of GHG emissions in the U.S. In 2013, the EPA issued a new proposal for carbon pollution from new power plants.
  2. **Final GHG Tailoring Rule** was set by the EPA in 2010 establishing GHG emissions thresholds to define when permits under the New Source Review Prevention Significant Deterioration (PSD) and title V Operating Permit programs are required for new and existing industrial facilities such as the nation’s largest GHG emitters: power plants, refineries, and cement production facilities.
  3. **Landfill Air Pollution Standards** were proposed by the EPA on July 1, 2014 to update the air standards for new municipal solid waste (MSW) landfills. These updates would require landfills to capture additional landfill gas, reducing emissions of methane.
  4. **Oil and Natural Gas Air Pollution Standards** are regulations finalized by the EPA in 2012, expected to produce a nearly 95% reduction in VOC emissions from more than 11,000 new hydraulically fractured gas wells each year.
  5. **Geologic Sequestration of Carbon Dioxide** is the process of injecting carbon dioxide into a well thousands of feet underground and sequestering it underground indefinitely. EPA has finalized requirements for geologic sequestration under the authority of the Safe Drinking Water Act’s Underground Injection Control Program (Environmental Protection Agency n.d.).
APPENDIX E

State Government Legislation

- Assembly Bill 4420, September 1988: directed the California Energy Commission (CEC) to prepare and maintain the inventory of GHG emissions and to study the effects of GHGs and the climate change impacts on the state’s energy supply and demand, economy, environment, agriculture, and water supplies.

- Senate Bill 1771, September 2000: established the creation of the non-profit organization, the California Climate Action Registry and specifies functions and responsibilities for monitoring GHG emissions, and setting GHG emissions baselines in coordination with CEC.

- Assembly Bill 1493, July 2002: requires the Registry, in consultation with the State Air Resources Board, to adopt procedures and protocols for the reporting and certification of reductions in GHG emissions from mobile sources for use by the state board in granting the emission reduction credits.

- Senate Bill 812, September 2002: added forest management to the California Climate Action Registry members’ reportable emissions actions by certifying carbon stores and carbon dioxide emissions that resulted from the conservation-based management of forests in California.

- Governor’s Executive Order # S-3-05, June 2005: establishes greenhouse gas emission reduction targets, creates the Climate Action Team and directs the secretary of Cal/EPA to coordinate efforts with meeting the targets with the heads of other state agencies. The EO requires the Secretary to report back to the Governor and Legislature biannually on progress toward meeting the GHG targets, GHG impacts to California, Mitigation and Adaptation Plans.

- Assembly Bill 32, September 2006: perhaps the biggest watershed moment for California’s climate change legislation. AB 32, the California Global Warming Solutions Act of 2006, required the Air Resources Board to adopt a statewide GHG emissions limit equivalent to the statewide GHG emissions levels in 1990 to be achieved by 2020 through the development of a Scoping Plan that was first approved by the Board in 2008. The Board approved the first update to the Climate Change Scoping Plan on May 22, 2014. AB 32 directs a Climate Action Team established by the Governor to coordinate the efforts set forth under Executive Order S-3-05 (2050 GHG Reduction Goal) to continue its role in coordinating overall climate policy.

- Senate Bill 107, September 2006: directed the California Public Utilities Commissions Renewable Energy Resources Program to increase the amount of renewable electricity (Renewable Portfolio Standard) generated per year, from 17% to an amount that equals at least 20% of the total electricity sold to retail customers in California per year by December 31, 2010.

• Senate Bill 375, September 2008: Sustainable Communities & Climate Protection Act of 2008 requires the Air Resources Board (ARB) to develop regional GHG emission reduction targets for passenger vehicles with targets for 2020 and 2035. SB 375 supports the State’s climate action goals to reduce GHG emissions through coordinated transportation and land use planning with the goal of more sustainable communities.

• Governor’s Executive Order # S-13-08, November 2008: directs state agencies to plan for sea level rise and climate impacts through coordination of the state Climate Adaptation Strategy. The Climate Adaptation Strategy which is designed to enhance climate management strategies identified in the 2009 California Climate Adaptation Strategy and subsequent releases – for climate change impacts including sea-level rise, increased wildfires, biodiversity and ecosystem/habitat protection, public health consequences, water access and quality (water management plans), increased temperatures, shifting precipitation, extreme weather events and emergency response strategies through the review of the latest scientific research leading to ongoing civic engagement and outreach.

• Assembly Bill 1504, September 2011: Forest resources and carbon sequestration bill requires the Department of Forestry and Fire Protection and Air Resources Board to assess the capacity of its forest and rangeland regulations to meet or exceed the state’s greenhouse goals, pursuant to AB 32.

(State of California, 2015)
http://www.climatechange.ca.gov/state/legislation.html
http://www.climatechange.ca.gov/state/executive_orders.html
APPENDIX F

The Ahwahnee Principles for Climate Change

Community Principles

8. Climate Action Plans for mitigating GHG emissions should be put in place by local governments; these will include inventories, targets for reduction, implementing strategies, timelines and a system for reporting annual progress. Plans should be incorporated into general plans either as a separate element that has influence over a broad range of activities or by incorporation into each of the traditional general plan elements.

9. Emissions related to personal auto use are often the largest single source of GHG pollution, therefore, addressing this source should be central to a Climate Action Plan and a priority for early implementation. Infill development should be recognized as the primary location of new construction, however all new development, wherever it may occur, should be guided by the Ahwahnee Principles for Resource Efficient Communities. Development built according to these principles will display a compact mixed-use pattern that supports walking, biking and transit, and protects open space and agricultural land. Development plans should be coordinated with a regional plan, where one exists. This kind of development can reduce vehicle miles traveled (VMT) and CO2 emissions by 20% to 40% per capita.

10. The Electricity and Commercial/Residential sector is likely the second largest source of community GHG emissions and an important target for reduction. Thus, energy conservation programs, energy efficiency and the use of a diverse array of clean alternative energy sources should also be central to the community Climate Action Plan and a priority for timely adoption. Applied to new and existing development, green building ordinances, energy conservation retrofit measures, energy efficiency standards for new buildings, and incentives/disincentives to reduce average square footage of new houses are among the measures that can be adopted.

11. Climate Action Plans should also include strong water efficiency standards, increased water conservation and water recycling strategies guided by the Ahwahnee Water Principles.

12. A Climate Action Plan should include measures that will help the community to adopt to the unavoidable impacts of climate change. this will involve planning for rising sea levels, shrinking water supplies, rising temperatures, food shortages and other challenges predicted to occur in the region.

13. Local governments should lead by example in reducing their own carbon footprint by enacting and implementing policies to reduce GHG emissions from their municipal operations while preparing for unavoidable climate change impacts.

14. Climate Action Plans should be developed through an open process that includes diverse members of the community and public health professionals. The process should include public outreach strategies and assure that the positive and negative impacts of reducing emissions are borne equally by all.
Regional Principles

9) Each region should develop and adopt, with its cities and counties, a blueprint for growth that achieves regional GHG emissions reduction targets. Blueprints should form the basis for city-centered growth infill development, open space protection, transit-oriented development and multi-jurisdictional corridor development. They should reflect differences among their communities.

10) Regional Transportation Plans and major regional transportation projects should be consistent with the regional blueprint.

11) Projects consistent with the blueprint that support infill development and reduce single occupant vehicle trips should be given priority in funding and a streamlined implementation process.

12) Efforts should be made by regions to vocally support such projects and defend them against opposition.

13) Regional Housing Needs Assessments that recognize the difference between regions and between communities should be coordinated with and reflect Climate Action Plans and other mechanisms for GHG emission reductions. Regional transportation, land use and GHG reduction plans must recognize differences between regions and between communities.

Implementation Strategy

8. All General Plans and Climate Action Plans should be made consistent with the principles contained in the Regional Blueprint Plans and Regional Transportation Plans.

9. General Plans and environmental review processes should be integrated with city and county Climate Action Plans to include climate change mitigation and adaptation measures and adoption procedures.

10. Zoning codes should be modified to be consistent with the General Plan to ensure implementation of the integrated General Plan/Climate Action Plan. Performance and form-based codes should be used to achieve the specified outcome.

11. City and county policies should be made consistent with the goals of the community Climate Action Plan (such as flexible work schedules, car-sharing and bike-sharing programs, etc.).

12. Monitoring and measurement of progress made in meeting both goals and targets set forth in the Climate Action Plan should be conducted regularly with results reported to the community.

13. When appropriate, communities should form joint powers authorities to jointly implement their climate action plans through developing sustainability corridors between two or more jurisdictions.
14. Cities and counties should coordinate with nearby jurisdictions and the regional government to share computer tools and other resources, and avoid duplicative efforts (Local Government Commission 2008).
APPENDIX G

Primary and Common Factors

Primary things heard and initial key findings in semi-structured interviews

Yes, planning for PPO & CC is very important and vital in most cases.

A new plan is not necessarily what is needed.

Community is “over planned”…had enough planning/visioning processes thrown at them.

Money is a huge factor in planning and implementation & the city has none.

Needs to be just as much of a bottom-up as a top-down approach towards planning and on-the-ground solutions.

Education at an early age to alter lifestyle behavioral patterns.

Moving away from auto dependence.

Terrible bus system (mass transit in general).

Implications of a coastal community.

Very unique community/situation due to economy built upon oil and agriculture.

Any plan or actions must be specific to the people/community/vernacular of Ventura – Community “buy-in”.

Demographics, levels of economy, etc.

Small, measurable, easily achievable (initial) steps of implementation…leading into conceptual long-range action items.

A living document; something that can and is intended to be altered and changed in the future as technology and needs of the community change.

Disadvantages:

- Compromising lifestyle/voluntary change
- Lack of Education
- Money/funding
- Denial/complacency/apathy

Barriers:

- Conservative “old boys’ town”
- “Jim Monahan factor” & “Bakersfield by the sea” mentality
- Lack of understanding.

of a plan
of the situation/science, etc.
A green infrastructure needs to be in place before we can expect/force/ask the public to change lifestyle patterns/choices (i.e. Mass transit, bicycle lanes, land-use that encourages more walkable/pedestrian friendly streets and neighborhoods, etc.).

Opportunity for Ventura to be a model.

Identify areas at risk, due to the implications of PPO & CC.

The use of social media and potential benefits.

Influence upon the economy.

Integrate into the cities Performance Measures
  Outcome based
  & provides accountability
  A check list or guidelines for PPO & CC to rate/measure how an application for a project/remodel is taking into account PPO & CC.

No need for a new plan.
  1. Compile elements needed for a complete PPO & CC action plan.
  2. Inventory all city plans
  3. Pull out PPO & CC related elements from all city plans
  4. Cross analyze related elements from city plans with those needed for a complete PPO & CC action plan to identify commonalities and gaps.
  5. Recommend how to move forward with implementing and holding accountable the existing commonalities.
  6. Recommend how to move forward with establishing and implementing the identified gaps.
  7. Identify who’s responsible, where possible funding could come from.
  8. Put it all into a flow chart/Gantt chart