Developing an Energy Efficiency Program

Greenhouse gases from human activities are the most significant driver of observed climate change since the mid-20th century (IPCC 2013). According to the EPA, "From 1990 to 2015, the total warming effect from greenhouse gases added by humans to the Earth's atmosphere increased by 37 percent (EPA 2017). The warming effects associated with carbon dioxide (CO2) alone increased by 30 percent." When considering the residential sector alone, it is responsible for 22% of U.S. primary energy consumption and CO2 emissions annually, stressing the importance of building energy efficiency (Ketchman, Khanna, Riley, & Bilec, 2016).

This paper offers insight on the development of an Energy Efficiency Program for the City of Encinitas, located in San Diego County. In 2018, the City adopted an updated Climate Action Plan (CAP) with ambitious goals, strategies, and actions. One of the strategies in the CAP is the reduction of building energy consumption by requiring existing residences to perform an energy assessment. The purpose of the program is to address this strategy whereby assisting in the implementation of the City's CAP in order to reduce greenhouse gas (GHG) emissions.

Because the City's CAP did not address how energy assessments would be implemented, the development of a specific program was necessary. The program established how energy assessments would be submitted, tracked and evaluated. The program also addressed cost impacts to the community and staff resources and provided alternatives for consideration. As part of the development of the program, a public outreach plan would be developed whereby increasing awareness about the program and to educate the community about the benefits. Several strategies have been developed to address cost impacts, public outreach, other options for consideration, and how to effectively communicate the benefits of the program as well as the City's role in climate change.

Overall, the main objective in the development of the program is to help the City meet the GHG reduction targets outlined in its CAP, while balancing the needs and expectations of all stakeholders, in order to gain the City Council's support.

The development of an Energy Efficiency Program provides an opportunity to successfully lead and implement change in the context of sustainability within local government. Once adopted, it will serve as a model for other jurisdictions, which will help the region progress towards a thriving resilient future.

Abstract

This paper offers insight on the development of an Energy Efficiency Program for the City of Encinitas, which is located in the County of San Diego. The purpose of the program is to help the City implement its Climate Action Plan (CAP) in order to reduce greenhouse gases (GHG) emissions. The residential sector alone is responsible for 22% of U.S. primary energy consumption and CO2 emissions annually, stressing the importance of building energy efficiency (Ketchman, Khanna, Riley, & Bilec, 2016). One of the strategies in the CAP is the reduction of building energy consumption by requiring existing residential units seeking building permits to perform an energy assessment. However, the City's CAP did not address how energy assessments would be implemented. Therefore, the development of a program was necessary. The program establishes how energy assessments would be submitted, tracked and evaluated to ensure the City is meeting its GHG reduction targets. Specific strategies have been developed to address cost impacts, public outreach, other options for consideration, and how to effectively communicate the benefits of the program. The objective in the development of the Energy Efficiency Program is to help the City meet their GHG reduction targets, while balancing the needs and expectations of all stakeholders involved, in order to gain the City Council's support in adoption of the program. Once established, the program will serve as a model for other jurisdictions.

Development of an Energy Efficiency Program began by looking at how to help the City of Encinitas implement its Climate Action Plan (CAP). Encinitas is a coastal city that is located in northern San Diego County and has a population of approximately 63,000 people. The city is made up of five communities and is governed by a five-member City Council with approximately 240 employees serving eight departments.

In 2017, the City established a CAP Working Group to update its CAP. A staff member from each department was assigned to the group. Each representative is responsible for helping evaluate and implement the CAP strategies that fall within their respective department. As a member of the City's CAP Working Group, my role as an Associate Planner and representative for the Planning and Building Department, is to implement strategies related to energy efficiency.

The City's CAP, which was updated and adopted on January 19, 2018, is a legally binding document with ambitious goals, strategies, and actions. The document serves as a comprehensive roadmap to address climate change (City of Encinitas Climate Action Plan, 2018). As part of the CAP, the City has set targets to reduce greenhouse gas (GHG) emissions from various activities within the city by years 2020 and 2030. Efforts to reduce GHG emissions within the city also contribute to statewide GHG reduction targets established by California Senate Bill 32, which established a GHG emission reduction target of 40 percent below 1990 levels by 2030.

Greenhouse gases from human activities are the most significant driver of observed climate change since the mid-20th century (IPCC 2013). According to the EPA, "From 1990 to 2015, the total warming effect from greenhouse gases added by humans to the Earth's atmosphere increased by 37 percent. The warming effects associated with carbon dioxide (CO2) alone increased by 30 percent" (EPA 2017). When considering the residential sector alone, it is responsible for 22% of U.S. primary energy consumption and CO2 emissions annually, stressing the importance of building energy efficiency (Ketchman, Khanna, Riley, & Bilec, 2016).

As such, one of the strategies in the CAP's Implementation Plan is to reduce building energy consumption and improve energy efficiency by requiring all existing residential units seeking building permits for modifications, alterations, and additions to perform an energy assessment. However, the strategy does not address how the energy assessments will be implemented (i.e., submitted, tracked, and evaluated). Implementation is critical to monitoring and reporting, which will help the City understand if it is achieving its GHG reduction targets.

Therefore, an opportunity was presented, which was to develop an Energy Efficiency Program for the City to help facilitate implementation of home energy assessments. Since the program will be implemented through the Planning and Building Department, the first step was to establish a sense of urgency for the project among senior staff by emphasizing how the CAP is a City Council priority and the department is responsible for the implementation of energy assessments. This resulted in the authorization to move forward and establish a framework for an Energy Efficiency Program, which was the first short-term win for the project.

The Energy Efficiency Program, which is specific to the City of Encinitas, would be the first of its type (i.e., requiring an energy assessment when seeking a building permit) among 18 cities within the San Diego County region. Development of the program will establish how energy assessments will be submitted, tracked and evaluated to ensure the City is meeting its GHG reduction targets. The program addresses potential cost impacts to the community as well as staff resources and provides alternatives for consideration. As part of the development of the program, a public outreach plan will be developed to increase community awareness about the program and to educate the community about the benefits of a home energy assessment. Once the program is established, it will serve as a model for other jurisdictions to consider for adoption, which will help the region progress towards a thriving resilient future.

FUNDING

Once the project was authorized, grant funds to assist in the development of the program were obtained through the SDG&E Emerging Cities Program, which provides technical support to cities engaged in energy efficiency projects. Among the list of consultants available for technical support, the City chose the Energy Policy Initiatives Center (EPIC), which is a non-profit academic and research center that specializes in climate planning and GHG inventories. Since EPIC had already assisted in the preparation of the City's Climate Action Plan, it made sense to have EPIC assist with the development of the Energy Efficiency Program. This also allowed the project to get underway quickly and resulted in a significant cost savings to the city, which was an additional short-term win for the project.

STAKEHOLDERS

Prior to addressing program implementation details, cost impacts, and public outreach, it was important to understand who the stakeholders are that will play a role in the success of the project. As a local government project, the primary stakeholder is the City Council, who will

consider the adoption of the Energy Efficiency Program. Stakeholders who can influence the City Council's decision are internal (city staff) and external (community). Throughout the project, prioritization and management of stakeholders' needs has shifted as the project has progressed. For example, since project initiation, city staff's power and interest has been the primary focus. Management efforts have been to keep staff satisfied and informed of the project details to ensure their continued support throughout the duration of the project. This has helped establish trust and a shared responsibility for project success.

During the development phase of the program, the community's power and interest has been low since they are not aware of the program. Public outreach about the program will not start until the City Council adopts the project. However, once the project is scheduled for a public hearing with the City Council, the community's interest will increase. Additionally, the community's influence on the Council can strengthen based on how many people attend the public hearing to support or oppose the program. Therefore, it will be necessary to increase management during the public hearing stage and if adopted, thereafter. The City Council is the primary stakeholder and while their power and interest are high, which means managing this stakeholder group closely, typically staff is unable to communicate with the Council until a project is scheduled for a public hearing. It's at this point in time when staff will manage this primary stakeholder closely. Until that time, strategically enlisting the help of senior staff, such as the City's CAP Administrator, to bring awareness to the project has been effective. The CAP Administrator briefs the City Manager on the status of the project on a monthly basis, who in turn briefs the City Council Members. This has allowed the project to remain on the City Council's radar.

IMPLEMENTATION

Leading the development of the Energy Efficiency Program has required staff assistance from several departments, including Planning and Building, I.T., and City Manager's Office, as well as a consultant with technical expertise in energy efficiency.

Together the team has addressed a number of components that needed to be assessed and developed, such as program implementation details, cost impacts, and a public outreach plan. Empowering the group to share their expertise has fostered team learning and collaboration, which has made the team collectively stronger and increased a shared vision.

Deciding how to implement the program began by reviewing other existing energy assessment programs such as the City of Berkeley, City of Austin and City of San Francisco. It was discovered that most jurisdictions adopted a point-of-sale method, which means the energy assessment is required when a home is sold. Unfortunately, this method required more resources than the City had available based on information from the City of Piedmont. The City of Piedmont reported significant costs associated with the integration of reporting platforms into a Department of Energy standardized tool as well as the ongoing costs related to the receipt of the energy scores and the maintenance of this data by the City for the purpose of measuring program effectiveness and estimated GHG reduction (City of Piedmont). The City of Piedmont's Planning Commission rejected an energy audit plan (point-of-sale method), citing it was too onerous (Boitano, 2016). Additionally, it did not align with the City's CAP strategy, which is to require the energy assessment when a homeowner seeks a building permit for modifications, alterations, and additions to their home rather than at the sale of their home. However, this type of information helped support the parameters selected for the Energy Efficiency Program. The review of existing programs proved to be an important step in the development of the program. It generated several questions that had not been initially considered, which are summarized in Appendix A. These outstanding questions required gaining further knowledge in order to continue moving forward on the project. For example, to understand what an energy assessment entails, the video "Conducting a Home Energy Audit: Residential Energy Efficiency Projects" was utilized, which covers the process of performing an energy assessment (Films Media Group 2014). To understand the different types of home energy scores/ratings, the California Energy Commission's Home Energy Rating System Booklet was utilized. These resources helped in selecting an assessment that will provide energy efficiency recommendations that, if completed, will count towards GHG reduction targets outlined in the City's CAP.

When considering the implementation details, walking through how the entire process will occur has been very helpful. For example, the program needs to address how and when energy assessments will be submitted to the City, which is a very important consideration. If the City requires that the energy assessment be submitted prior to the issuance of the building permit, the chances of the owner making the energy efficiency improvements are low. Since the plans are essentially ready for approval, the likelihood that the owner would make additional changes to the plans to incorporate upgrades and resubmit them again is low. Therefore, the

energy assessment will be required as part of the initial building permit application submittal. This ensures the homeowner will consider the voluntary recommendations in the assessment prior to submitting to the city, whereby increasing the opportunity for energy efficiency upgrades to occur. At the same time, this will likely cause significant push back from applicants that are not aware of the energy assessment requirement. This concern will be addressed as part of the public outreach plan.

Another important consideration has been determining the parameters that will trigger an energy assessment. The language in the City's CAP (i.e., a modification, alteration or addition) is too broad and captures a vast majority of the City's building permits. For example, adding a deck or a swimming pool to a home would trigger an energy assessment, which not the intent and may have been an oversight when the CAP was updated. To date, determining the parameters as well as other options for consideration, continue to be evaluated to determine the appropriate requirements for the program.

COST IMPACTS

Consideration of cost impacts is critical to the successful adoption of the program. For example, the requirement of an energy assessment could potentially be seen as a cost impact to homeowners. The average cost for an energy assessment is approximately $300 dollars. The City Council will need to decide if the homeowner or the city will assume the cost of the energy assessment. As such, one strategy is to provide an option to the Council to have a city staff person certified as an energy auditor. This will provide the city with a staff expert and result in a cost savings to the homeowner. As part of this strategy, seeking external funding through state and local utilities will be proposed. This strategy will appeal to the community as well as the City Council.

The City will also need to develop a process for tracking and evaluating the energy assessments, which means ensuring there are enough staff resources. Since the Planning Division already tracks several permits and the energy assessments will be tied to building permits, tracking will be easy. Energy assessments will be tracked three separate ways. The City will utilize a new online permitting software application (i.e., Energov) to input and track the energy assessments, which will occur during submittal for a building permit. In addition, the City will be utilizing the ClearPath platform, which is an online software platform to help the City manage climate mitigation efforts (ClearPath - ICLEI USA). The City is fortunate that local governments

in the California can utilize ClearPath at no-cost through the Statewide Energy Efficiency Collaborative program. Utilization of ClearPath will result in significant cost savings to the City, which is another short-term win for the project.

The program will function with existing staff resources, which will increase the chance of adoption by the City Council. Furthermore, when the program is presented to the City Council, it will be suggested that the Council receive an update after one year to evaluate if additional resources or program changes are necessary. This will help ensure long-term success of the program.

PUBLIC OUTREACH

As part of the CAP update process, multiple public workshops were conducted, which allowed the public to guide which strategies (i.e., energy assessments) were included in the CAP. However, although the community had been made aware of the specific strategy to require an energy assessment when seeking a building permit, with a population of approximately 63,000, it can't be expected that everyone has the time to participate in the public outreach process. Additionally, most homeowners have contractors and/or architects to submit their building plans and they often live outside the city limits. Furthermore, the CAP strategy, as written, does not outline the specific implementation details. Therefore, to ensure successful implementation of the program, it is essential to develop a public outreach plan. This will help ensure the community as well as those in the building industry are aware of the program and that homeowners understand the benefits of conducting an energy assessment on their home. This includes developing a webpage about the program, conducting a public workshop, preparing flyers and handouts. In addition to ensuring community awareness, city staff will need training to understand the program and their role in the implementation process to ensure program success.

To gain City Council and community support, the strategy is to highlight the benefits of an energy assessment during the public hearing process. This increases the chance of the program being adopted by the City Council. To effectively communicate the message, the following information will be highlighted:

- The residential sector is responsible for 22% of U.S. primary energy consumption and CO2 emissions, annually, stressing the importance of building energy efficiency (Ketchman, Khanna, Riley, & Bilec, 2016).
- Conducting an energy assessment is the first step to make a home more efficient.

- Energy efficiency is using less energy to provide the same level of energy service. For example, insulating a home allows a building to use less heating/cooling energy.
- An energy assessment can assess how much energy a home uses and evaluate measures to improve efficiency to ensure a home operates more efficiently.
- Benefits, which include improved air quality and energy/cost savings. These benefits can reduce a home's carbon footprint, add value to the property and help Encinitas reach its GHG reduction targets, which contribute to state GHG reduction targets.

Another strategy is having Dadla Ponizil, an Encinitas community member, whose home was recently part of the US Green Building Council Green Homes Tour (San Diego Green Homes Tour, 2018). Dadla will be a valuable resource during the public hearing process by educating the Council and community on the benefits of an energy assessment and highlighting his home efficiency upgrades.

STRATEGY

Several specific strategies have been developed to address cost impacts, public outreach, and effectively communicating the benefits of the program to gain stakeholder support.
Once the project is ready to go to a public hearing for the City Council's consideration, one additional strategy is to appeal to the City Council's emotions by communicating the City's role in addressing climate change. Emphasizing the following points will help the spark the Council's call to action:

- The City is seen as a climate action leader in the San Diego region based on past sustainability efforts.
- The City's Strategic Plan is to make the promotion of green initiative projects among its top priorities.
- The Energy Efficiency Program is another opportunity for the City to be seen as a climate action leader in the San Diego region by adopting a program of this type.
- Adopting the Energy Efficiency Program is a necessary step to allow the City to monitor and report on its GHG reduction efforts related to energy efficiency.
- The community has an opportunity to play a role in this effort and will benefit by reducing their home's carbon footprint, which can add value to their property.
- The City, working together with the community, to further this effort is a demonstration of the commitment to implement the goals, strategies, and actions in

its legally binding CAP, in order to reduce GHG emissions, which also contributes to statewide GHG reduction goals.

CHALLENGES

While development of the Energy Efficiency Program remains in progress and continues to move forward, the scope of the project has had a minor change. Preparations were being made to present the program to the City Council in August; however, the project was removed from the City Council's Tentative Agenda for further consideration by the City Manager. The City Manager had been made aware of the City of Carlsbad's approach to energy efficiency, which had recently been adopted. The City of Carlsbad's energy efficiency program requires less staff resources to implement and requires completing energy efficiency improvements rather than making them voluntary. It was then questioned if Carlsbad's approach would yield greater GHG reductions. As such, the direction from the City Manager was to evaluate the following two options in order to determine the best approach for the City of Encinitas:

- Option 1 - As outlined in the City's CAP, require existing homes seeking a building permit for an addition, alteration or modification, to have an energy assessment performed, but any recommended energy efficiency improvements suggested in the energy assessment would be voluntary.
- Option 2 - Use the City of Carlsbad's approach, which would require existing homes seeking building permits for additions and alterations, to make energy efficiency improvements based on a building permit valuation of $60K and the type and year the residential building was built. Improvements include a variety of options such as heating/cooling ducts, attic insulation, cool roof, water heating and lighting packages. Table 1 below provides an overview of Carlsbad's approach to residential energy efficiency.

Table 1 – City of Carlsbad Approach

TRIGGER: Energy efficiency improvements are triggered by all renovations of existing single-family and multi-family residential buildings with a building permit valuation of $60,000 or more and by building type/year.			
Type and Year	**Options***		
Single-Family before 1978	Duct Sealing	Attic Insulation	Cool Roof
Single-Family 1978 or after	Lighting Package	Water Heating Package	

Multi-Family before 1978	Attic Insulation		
Multi-Family between 1978 and 1990	Duct Sealing	Attic Insulation	Cool Roof
Multi-Family built after 1991	Lighting Package	Water Heating Package	
* Property owner can pick one of the options where there is more than one available.			

Evaluation of the two options entails the following tasks:

1. Reviewing the existing CAP's estimated GHG reductions based on the existing strategy and comparing that number with the estimated GHG reductions using Carlsbad's approach. Would utilizing Carlsbad's approach yield further GHG reductions? This task is currently being conducted by the consultant (EPIC).
2. Cost analysis of the options used in Carlsbad's approach. Will there be cost impacts associated with any of these options? This task is currently underway and being completed by city staff.
3. Analysis of the number of building permits with a valuation of $60,000 on an annual basis. How many building permits would be affected? This task is currently underway and being completed by city staff.
4. Evaluate what exemptions would need to be included. For example, Carlsbad's approach exempts residential buildings from the energy efficiency measures if they receive a rating of seven or higher on the U.S. Department of Energy's Home Energy Score rating system based upon an assessment by a Home Energy Score Certified Assessor. This task is currently underway and being completed by city staff and EPIC.
5. Evaluate what amendments would need to be made to the CAP if it is decided to move forward with Carlsbad's approach. To keep the CAP up to date, any deviations from the strategies, requires an amendment to the plan in order to incorporate the changes. This task will be completed if it is determined that the best option is to move forward with Option 2.

Overall, evaluation of the two options will allow for a better understanding of the benefits and impacts for each option, which will help support staff's recommendation to the City Council.

At the same time, it also extends the project completion timeline. However, taking the time to look at all available options and conducting a thorough analysis of those options, will ultimately help achieve a successful program.

A tentative project timeline for completion was developed and is provided in Table 2 below. The timeline also takes into consideration a change in project scope, which occurred late in the process and has since extended the project completion date. Table 3 below, provides a work breakdown structure for the project. The change in project scope was not included in table since the work structure for this type of project would remain the same. However, had the initial public outreach not been conducted, I've added a task where it would have needed to occur, which is shown as 1.1.2 Public Outreach, under Level 3.

Table 2 - Gantt Chart

TENTATIVE PROJECT TIMELINE																							
PROCESS	STEPS	2018-2020 CALENDAR																					
		2018				2019												2020					
		Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr		
SECURE CONSULTANT TO ASSIST WITH DEVELOPMENT OF ORDINANCE AND PROGRAM DETAILS	▪ Prepare scope and obtain three quotes ▪ Selection process ▪ Prepare contract																						
DEVELOP PROPOSED REGULATIONS AND PREPARE DRAFT ORDINANCE AND ENERGY EFFICIENCY PROGRAM DETAILS	▪ Kickoff Meeting ▪ Develop regulations/program details ▪ Draft Ordinance ▪ Review with Planning & Building																						
PUBLIC HEARING -CITY COUNCIL (1ST READING)	▪ Schedule hearing date ▪ Prepare public notice ▪ Prepare agenda report												✸										
RE-EVALUATE TO CONSIDER NEW OPTION	▪ Evaluate new option ▪ Compare options 1 & 2																						
PUBLIC HEARING -CITY COUNCIL (1ST READING)	▪ Schedule hearing date ▪ Prepare public notice ▪ Prepare agenda report																						
PUBLIC HEARING -CITY COUNCIL (2ND READING)	▪ Schedule hearing date ▪ Prepare public notice ▪ Prepare agenda report																						
PREPARE FOR IMPLEMENTATION – PUBLIC OUTREACH	▪ Staff training ▪ Conduct public workshop ▪ Outreach materials																						
PROGRAM IMPLEMENTATION BEGINS	▪ Ensure staff is clear on implementation process																						
✸ Project was removed from the Council Agenda. City Manager requested evaluation of new option, which has extended project timeline.																							

Table 3 - Work Breakdown Structure

CITY OF ENCINITAS - ENERGY EFFICIENCY PROGRAM				
LEVEL 1		*LEVEL 2*	*LEVEL 3*	*PROJECT TEAM*
1	PROGRAM	1.1 Process	1.1.1 Research	

	DEVELOPMENT	1.2 Resource List 1.3 Certification/Other	1.1.2 Public Outreach	▪ City's Consultant – Energy Policy Initiatives Center (EPIC) ▪ CAP Administrator, City Mgr. Office ▪ Principal Planner, Planning Dept. ▪ Associate Planner, Planning Dept. ▪ Program Assistant, Planning Dept. ▪ Supervisor, I.T. Dept. ▪ Building Official
2	ORDINANCE	2.1 Requirements 2.2 Public Hearings	2.1.1 Agenda Report Packet	
3	MARKETING	3.1 Website 3.2 Workshop	3.1.1 Marketing Materials 3.1.2 Training 3.1.3 Certification/Other	
4	TRACKING	4.1 EnerGov Software 4.2 ClearPath Software		
5	EVALUATION	5.1 Public Hearing	5.1.1 Agenda Report Packet	

BUDGET

1. Ordinance/Program Development – Covered under Emerging Cities Program Grant Funds
2. Certification for staff employee - approx. $2,000 (optional item)
3. Explore external funding opportunities (state and local utility companies)
4. Staff time - covered under City's operational budget
5. Marketing - covered under City's operational budget/contract

WBS DICTIONARY

LEVEL	*WBS CODE*	*ELEMENT NAME*	*ELEMENT TASK (ACTIONS)*
1	**1**	**Program**	All the work necessary to develop the program to implement the ordinance requirements.
2	1.1	Process	Develop how the program will function.
3	1.1.1	Research	Research other city energy efficiency programs to learn what works and the best approach to model.
3	1.1.2	Public Outreach	Conduct Public Workshop to receive public comments on draft.
2	1.2	Resource List	Develop a list of energy raters that provide energy assessments.
2	1.3	Certification/Other (optional)	Research having a city employee certified as energy rater - If City Council wants the service free of charge.
1	**2**	**Ordinance**	All the work necessary to draft and adopt the ordinance.
2	2.1	Requirements	Draft ordinance to modify the City's Municipal Code to require all existing residential units that seek building permits for modifications, alterations, and additions to perform an energy assessment.
2	2.2	Public Hearings	Prepare for public hearings with the City Council.
3	2.1.1	Agenda Report Packet	Prepare agenda report, presentation and public notice.
1	**3**	**Marketing**	All work necessary to promote, educate and bring awareness to the program.
2	3.1	Website	Develop a web page about the program on the City's website.
2	3.2	Workshop	Plan public workshop to explain the benefits of an energy assessment.
3	3.1.1	Marketing Materials	Prepare FAQ handouts, PR Release, Social Media Content to bring awareness to the program.
3	3.1.2	Training	Train employees about /how to implement the program.

3	3.1.3	Certification	Certify employee to conduct energy assessments (if authorized by Council).
1	**4**	**Tracking**	Work necessary to develop how the City will track the number of energy assessments performed separately from how they will be entered into the City's permit system (i.e., EnerGov).
2	4.1	EnerGov (permit-tracking software)	Work with I.T. Supervisor to integrate the tracking of energy assessments along with the building permit they are tied to in Energov.
2	4.2	ClearPath (software)	Prepare platform to help the City manage climate mitigation efforts.
1	**5**	**Evaluation**	All the work necessary to evaluate the program after 1 year of implementation.
2	5.1	Public Hearing	Prep for public Hearing with the City Council to evaluate if any changes to the program are necessary.
3	5.1.1	Agenda Report Packet	Prepare agenda report and presentation.

CONCLUSION

Overall, the main objective in the development of an Energy Efficiency Program is to help the City meet its GHG reduction targets outlined in its CAP related to building energy efficiency. The program's focus is on the residential sector, which alone is responsible for 22% of U.S. primary energy consumption and CO2 emissions annually, stressing the importance of building energy efficiency (Ketchman, Khanna, Riley, & Bilec, 2016).

When developing such a program, it is imperative to balance the needs and expectations of all stakeholders (i.e., City Council, city staff, and community) involved in order to gain the City Council's support in the adoption of the Energy Efficiency Program. Furthermore, it is essential to evaluate potential cost impacts, funding opportunities, implementation process, public outreach, and overall strategy to ensure the development of a successful program.

Once the program is adopted, regardless of the approach that is ultimately selected, it will serve as a model for other jurisdictions to consider. It will also add to the growing number of jurisdictions that have already adopted similar energy efficiency programs to assist in the reduction of GHG emissions, which will help the region as a whole progress towards a thriving resilient future.

Looking back, establishing a sense of urgency opened the door to allow this project journey to begin. As the project moves towards completion, the progress made in the development of an Energy Efficiency Program for the City of Encinitas has provided an opportunity to demonstrate the ability to successfully lead and implement change in the context of sustainability within local government.

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Appendix A

SUMMARY OF ENERGY EFFICIENCY PROGRAM QUESTIONS	
Topic	**Question**
Trigger for Assessment Requirement	▪ What specifically will trigger the assessment – modifications, alterations and additions OR building type, size and/or project cost?
Applicability by building type, square footage, other and exceptions	▪ Determine applicability based on building use type and square footage? ▪ Consider limiting applicability by building size, project size, or project cost? ▪ Consider building exemptions – buildings constructed within a certain number of years, hardship, high performance energy efficiency buildings, buildings smaller than 600 square feet, and any other exceptions?
Administrator Discretion	▪ Who should be granted discretion to implement the ordinance? ▪ What should be defined by the ordinance and what should be left to the discretion of the Administrator?
Compliance Timeline	▪ Should we establish assessment timelines? ▪ Should ongoing compliance reporting be considered? ▪ Submittal requirements for energy assessment? ▪ Energy Auditor qualifications and registration (if not conducted by City)
Assessment Standards	▪ What type of energy assessment will be required? ▪ Energy Upgrade California Advanced Assessment from SDG&E or an Energy Star Performance Report and Home Energy Score?
Reporting & Public Disclosure	▪ Will the energy audit be provided to any other person or entity besides the City? ▪ Will homeowner's energy assessments be available to the general public?
Enforcement	▪ What is the appropriate level of enforcement to ensure compliance with the ordinance?
Fees	▪ Should the City collect a fee to review the submitted energy assessment or to maintain the tracking/reporting?