REACH CODE SUBPROGRAM 2010-2012 PROCESS AND PILOT IMPACT EVALUATIONS

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1. Executive Summary

The Reach Code Subprogram (Subprogram) is implemented by California's investor-owned utilities (IOUs), which include Southern California Edison Company (SCE), Pacific Gas & Electric (PG&E), Southern California Gas Company, and San Diego Gas and Electric (SDG&E). The Subprogram staff works with jurisdictions to develop and adopt reach codes. Subprogram participants are jurisdictions that received services from the Subprogram, regardless of whether they completed the California Energy Commission (CEC) approval process and have a CEC-approved reach code.

Under a contract with the California Public Utilities Commission (CPUC), DNV KEMA contracted with Cadmus to conduct process and impact evaluations of the Reach Code Subprogram. Cadmus began the evaluation with an evaluability assessment of the Subprogram, which determined that the savings claims submitted by IOUs did not include sufficient data to evaluate and verify the claims. Because of the lack of data, and the fact that the Subprogram's budget represented only 8% of the total budget for the Codes and Standards programs (see Table 1), the evaluation management team decided Cadmus would conduct a process evaluation and pilot impact evaluation with a limited scope rather than a full-scale evaluation.

Table 1. 2010-2012 Codes and Standards Program Budgets

IOU	Reach Code Subprogram Budget	Portfolio Budget
PG&E	$1,383,790	$18,361,335
SCE	$776,971	$6,766,718
Southern California Gas Company	$99,999	$1,802,535
SDG&E	$99,999	$2,204,292
Total	**$2,360,759**	**$29,134,880**

Reach Codes in California

California jurisdictions can adopt reach codes, which are local ordinances that set building energy requirements exceeding the California State building energy code (Title 24, Part 6). Local ordinances can only be legally enforced after the CEC approves them. The Reach Code Subprogram supports jurisdictions in the development and submittal of local reach codes for CEC for approval.

Typically, jurisdictions first establish the level of energy efficiency and the types of building projects their reach code will include; then, they adopt the code locally according to the jurisdiction's process. Jurisdictions then submit the reach code and supporting documentation to the CEC for approval. Once the CEC approves the reach code, the jurisdiction files it with the Building Standards Commission.

To receive CEC approval, a reach code submission must: 1) explicitly indicate that it will create more energy savings than the current California code, and 2) show that the full scope of the reach code is

cost-effective within the jurisdiction's climate zone(s). In addition, the reach code cannot include any requirements that conflict with other state or federal codes.

Evaluation Objectives

Process Evaluation

Cadmus conducted a process evaluation of the Reach Code Subprogram to:

- Document the differences between how the Program Implementation Plan (PIP) describes the Subprogram and how it was implemented.
- Identify possible improvements that the IOUs could make to the Subprogram's design and implementation.
- Evaluate whether the Subprogram provides the support California jurisdictions need to develop and adopt reach codes.

Pilot Impact Evaluation

Cadmus also conducted a pilot impact evaluation of the Subprogram. For a standard impact evaluation, the evaluator verifies a program's claimed savings. However, program staff had not calculated the Reach Code Subprogram's claimed savings, only its projected potential savings, as shown in Table 2.

Table 2: Reach Code Subprogram's Projected Statewide Savings*

Total Estimated Savings	2010	2011	2012	2013
Gross Electric Savings (GWh)	2.6	5.5	8.4	11
Gross Natural Gas Savings (MMT)	.10	.21	.32	.44

*Heschong Mahone, Inc, *Projected Savings from Reach Code Programs*, April 27, 2011.

Furthermore, these calculations did not have sufficient detail for Cadmus to evaluate and verify the Subprogram's projected savings. Therefore, Cadmus conducted a pilot impact evaluation to:

- Assess whether the Codes and Standards Evaluation Protocol can be applied to the Reach Code Subprogram.
- Determine the reasonableness of the methodologies and assumptions used by the IOUs to estimate the Subprogram's energy savings.
- Assess the potential level of attribution of energy savings to the Subprogram.
- Estimate the potential impacts of double counting energy savings from other IOU program activities and the Reach Code Subprogram activities.
- Identify possible revisions to the Codes and Standards Evaluation Protocol to more effectively apply it to the Reach Code Subprogram.

These tasks are also covered in the Evaluation Plan.[1]

Key Findings

The following sections outline the key findings of Cadmus' process and pilot impact evaluations. We based these findings on a review of Subprogram materials and on interviews with Subprogram staff, consultants, and staff from 16 participating jurisdictions.

Key Process Evaluation Findings

- Cadmus found two key barriers that prevent jurisdictions from adopting CEC-approved reach codes. The first barrier occurs when jurisdictions do not have the local political support to pursue a reach code. The second barrier occurs when jurisdictions' are unable to obtain cost-effectiveness studies of their proposed reach codes that meet the CEC requirements for approval.
- The Subprogram does not directly address the first barrier to adopting a reach codes—a jurisdiction's need for political support. The Subprogram's activities do not include advocating for jurisdictions to adopt reach codes and the Subprogram staff does not attempt to sway local politics. However, the Subprogram staff does provide information on the costs and benefits of a reach code and other technical expertise that others can use to support attempts to affect local policy-making.

[1] Cadmus, *Reach Code Subprogram Process and Pilot Impact Evaluation Plan*, September 19, 2012.

- The Subprogram does address the second barrier effectively by providing jurisdictions with cost-effectiveness studies that meet the CEC requirements for reach codes. In fact, the majority of the interviewees from jurisdictions with CEC-approved reach codes reported that they could not have successfully pursued a CEC-approved reach code if the Subprogram had not provided the study. Furthermore, all of the jurisdictions we interviewed with CEC-approved reach codes had used a cost-effectiveness study provided by the IOUs in their reach code submission to the CEC. Prior to the Subprogram providing these studies, the CEC staff also noted that the biggest barrier to jurisdictions pursuing a CEC-approved reach code was not being able to obtain a study.
- The most common reason jurisdictions cited for adopting a CEC-approved reach code was to support a climate action plan (CAP) or other sustainability initiatives. Interviewees from over half the jurisdictions indicated that their jurisdiction had pursued a reach code for one of these reasons; both of which could promote political support for the adoption of a reach code in a jurisdiction.
- Interviewees also cited a desire for their jurisdiction to be seen as a leader in sustainability or a rivalry with other jurisdictions as common factors for pursuing reach codes. Staff from five out of 16 jurisdictions indicated that being seen as a leader was one of the reasons their jurisdiction pursued a reach code, and almost half indicated that it was to show their communities' commitment to sustainability. In addition, several of the interviewees who had worked in regional groups to establish a consistent reach code across jurisdictions noted the biggest challenge in the process was convincing their city council to adopt the regional code rather than try to outdo the other regional jurisdictions.
- The Subprogram as implemented does not match the Subprogram's description in the PIP. The PIP indicates that the IOUs require jurisdictions to optimize compliance with the existing codes prior to participating in the Reach Code Subprogram. However, the Subprogram as implemented does not have any requirements that the jurisdictions have to meet prior to receiving support from the Subprogram's staff or consultants. The Subprogram staff noted that they do inform participants of upcoming trainings to improve the enforcement of the current codes; however, attendance is not required. The PIP also states that the Subprogram will track information when implementing a reach code, but the IOUs do not document anything regarding implementation of the reach codes. In addition, the PIP does not indicate the Subprogram objective, as expressed by the Subprogram staff, of ensuring that jurisdictions have all of the information they need to decide whether to pursue a CEC-approved reach code.
- Once a jurisdiction has the political support to adopt a CEC-approved reach code, the Subprogram provides the support and resources the jurisdiction needs to be successful. In addition to providing jurisdictions with the climate zone-specific cost-effectiveness studies needed for CEC-approval, the interviewed jurisdiction staff reported receiving technical support

and general guidance from the Subprogram staff and consultants to help them through the development and submission process.

- As designed, the Subprogram effectively tracks some but not all of its accomplishments. The Subprogram staff and consultants track participants' contact information, delivery of a few specific services, and when a jurisdiction's reach code is approved by the CEC. This allows the IOUs to measure the number of participating jurisdictions that: 1) adopted CEC-approved reach codes (the performance metric for the Subprogram specified in the PIP) and 2) received a few explicit services. However, the IOUs do not track data about Subprogram activities that support their other objectives: to reduce the amount of duplicated efforts between jurisdictions; to support uniformity between reach codes among jurisdictions; and to provide jurisdictions with solid, credible information to inform their decision whether to pursue a reach code.
- Many building departments value having consistent code requirements across jurisdictions. Building staff from almost one-third of the interviewed jurisdictions worked with staff from other jurisdictions in their region to develop consistent requirements across the region. This agrees with findings from other Cadmus studies, including the *Rhode Island Residential Energy Codes: Views of Builders and Code Officials*[2], in which building officials' and industry stakeholders indicated that the building community strongly favors consistent requirements across a region.
- The PIP does not specify how the Subprogram would recruit participants. However, Subprogram staff reported conducting outreach through presentations to members of industry and other pertinent organizations, including the IOUs' Local Government Partnership. This proved to be an effective outreach strategy as the majority of staff at participating jurisdictions indicated they were introduced to the Reach Code Subprogram services by a third party. (The third party was familiar with the services offered by the Subprogram, but was typically someone from an industry group or an IOU staff member not directly involved in the Subprogram.)
- Many of the participants did not attribute the services they received to support the adoption of a reach code to the Subprogram or even to the IOUs. Instead they attributed the services they received to one of the Subprogram consultants. In addition, less than half of the interviewees with a CEC-approved reach code were aware of the Subprogram, and only a few knew it by name.
- Jurisdictions we interviewed did not track the impacts of having a reach code, and many did not have the capability to track anything more than basic permit information. In fact, many interviewees reported their jurisdictions' systems could not track enough detail to identify which projects were required to meet the reach code.

[2] Cadmus, *Rhode Island Residential Energy Codes: Views of Builders and Code Officials*, December 2012.

- Jurisdictions that track greenhouse gases are not correlating the emission savings to their reach codes. At just under half of the jurisdictions, staff reported that they track greenhouse gases in their jurisdictions, but that they base emission savings on gross utility data and could not track the savings to a specific project.
- CEC and the Subprogram staff and consultants closely work together to help jurisdictions successfully adopt CEC-approved reach codes. Interviewees from both staffs and consultants reported having good relationships and working together to help jurisdictions adopt CEC-approved reach codes.
- Industry stakeholders are influential in identifying the scope of the reach codes in jurisdictions. Interviewees from almost all the jurisdictions indicated that stakeholders were influential in shaping the scope of the reach code in some capacity.

Key Impact Findings

- Cadmus could not verify the Subprogram's savings claims because the IOUs' calculations used data from secondary sources and assumptions rather than actual data from the jurisdictions with reach codes.[3] The IOUs' use of secondary data does not meet the requirements of the impact evaluation protocol employed in the California IOUs' Codes and Standards (C&S) Program evaluation for program years 2006-2008 (Protocol). Furthermore, the IOUs' calculations did not adjust for possible double counting of savings already claimed by the IOUs' other programs. Cadmus could have applied the Protocol to the Subprogram's savings had the IOUs used actual data from the jurisdictions. Consequently, the IOUs' approach did not meet the Protocol's requirements.
- Cadmus interviewed the consultant who produced the IOUs' savings estimate, and he indicated the calculations were not meant to estimate claimed savings for the Subprogram but to determine the potential magnitude of the Subprogram's savings. This is reinforced by the IOUs' 2011 memorandum*, IOU 2010-12 Reach Code Subprogram Savings Estimates* (calculation methodology memo), which states that the inputs used in the calculations "could change significantly."
- Although Cadmus concluded that the IOUs' use of secondary data sources and assumptions was not a rigorous enough approach for calculating the Subprogram's claimed savings, Cadmus determined the analysis was reasonable for estimating the magnitude of the Subprogram's projected savings due to the following circumstances:

[3] As an example of how secondary data were applied, the IOUs used CEC forecasts for the growth in the percentage of square footage of single-family homes built in California under a reach code for 2011, instead of calculating the actual square footage of single-family homes built in jurisdictions with reach codes that year.

  - Much of the data necessary to apply the Protocol is not currently available or would be challenging or costly to collect. As noted in the Key Process Findings, most jurisdictions did not track the impacts of having a reach code, and many do not have the capability to track anything more than basic permit information.
  - The Subprogram's potential savings are relatively small compared to those of the overall C&S Program and, therefore, given the scope of this evaluation, were not worth the potential costs of attempting to obtain the data required to apply the Protocol.
  - Cadmus estimated that the impact of discounting the energy savings for double counting was very minimal (0.18%) and, given the Subprogram's small potential savings, most likely not worth the expense of tracking and accounting for it.
- Although Cadmus found the approach used by the IOUs for calculating projected savings was reasonable, Cadmus concluded that the IOUs could have improved the estimates and made them more transparent and easier to assess without expending significant resources. The IOUs could have used more accurate and current data in some cases. For example, the IOUs based their calculations on the assumption that the percentage of square feet of new construction in California that is built under a reach code will consistently increase by 5% for each year between 2010 and 2013. However, in late 2012, the rate of jurisdictions adopting a reach code decreased as the new code cycle approached, which most likely slowed down this growth in total square footage built under a reach code. To consider this trend, the IOUs could have applied a lower rate of growth for the construction built under a reach code. Because the IOUs did not provide an explanation or citation for their sources, Cadmus was unable to evaluate some of the estimates.
- Cadmus found the Subprogram 's activities were extremely important to jurisdictions that received CEC approval for their reach code:
  - 80% (eight of 10) of jurisdictions indicated they would not have been able to obtain a cost-effectiveness study had the Subprogram not provided one, and, therefore, would not have been able to adopt a CEC-approved reach code.
  - All of the jurisdictions with CEC-approved reach codes submitted a cost-effectiveness study provided by the Subprogram for their reach code submission to the CEC.
- Cadmus estimated an attribution factor for one requirement that had to be met for adoption of an enforceable reach code—the CEC's approval of a proposed code's cost-effectiveness study. Based on the responses of interviewed jurisdictions, we estimated an attribution factor of 80% to the Subprogram for this one step in the reach code adoption process because eight out of 10

jurisdictions reported they could not have provided the required cost-effectiveness study without the Subprogram.[4]

- Sufficient data were not available to determine the value of the Subprogram to ratepayers objectively. However, the evidence demonstrated that the Subprogram contributed to the adoption of reach codes and it is commonly accepted that reach codes are an effective method to test and prepare the market for new codes and increase the demand for new technologies and higher efficiency equipment: elements which directly support California's energy-efficiency goals. Based on Cadmus' findings that 80% of the jurisdictions in our sample would not have adopted a reach code without the Subprogram's support we conclude that the Subprogram is a valuable component of the IOUs' portfolio.

Recommendations

Based on our evaluation findings, Cadmus offers the following recommendations for the IOUs and implementers:

- If the Subprogram is continued as a resource program, the relevant parties need to identify what data can be obtained to support claimed savings. Based on these data, the parties could then determine if an alternative impact evaluation protocol would be required to estimate the Subprogram's impacts.
- To support calculating the energy savings generated by the Subprogram, the Subprogram implementers should develop data collection requirements and protocols, and work with participating jurisdictions to compile a minimal set of data once a reach code is implemented.
  - However, it should be noted that jurisdictions have limited resources to put toward activities that are not mission-critical and may require financial and/or technical support to meet any new data tracking requirements. Consider providing jurisdictions with software or support to increase their data-tracking capabilities. Investigate the possibility of a statewide system that is administered centrally and is accessible to all California building departments to help facilitate consistent tracking.
  - The data Cadmus recommends tracking to facilitate the evaluating of the impact of the reach codes includes:
    - **New Construction:** the number of single-family, multifamily, and nonresidential new permits; permit application date; address and floor area of each building; usage

[4] The evaluation did not have enough resources for Cadmus to assess the attribution of the Subprogram based on all of the factors in a jurisdiction's adoption of a CEC-approved reach code. Therefore, Cadmus focused on assessing the Subprogram's contribution to jurisdictions get CEC approval of their reach code. For more information, see the Assessment of the Potential Level of Attribution section in the Pilot Impact Evaluation Findings chapter.

category (retail, office, medical, etc.) for nonresidential buildings; and space heating, cooling, and water heating energy types.

- **Existing Construction:** the category of building being renovated; type of renovation and specific requirements covered by Title 24; total square footage of building and square footage affected by renovation; and the address and permit application date.

- Implement the Reach Code Subprogram based on its description in the PIP or submit revisions for approval.
- Revise the Subprogram performance metrics to better reflect the IOUs' progress toward the Subprogram's objectives. Updated metrics might include the number of jurisdictions that received education from the Subprogram staff and the percentage of jurisdictions that used Subprogram materials in their CEC submission. In addition, we suggest exploring ways to track the long-term influence of the Reach Code Subprogram's activities on reach code adoption in the participating jurisdictions that did not have CEC-approved reach codes.
- Explore ways to acknowledge jurisdictions with CEC-approved reach codes to both recognize their leadership and inspire other jurisdictions. In addition, consider highlighting jurisdictions that worked together to adopt a regional code, to not only draw attention to the benefits of having consistent codes in a region, but also to discourage some jurisdictions' tendencies to compete with their neighbors.
- Continue to perform outreach to third parties who are potential referral sources for the Subprogram (such as members of International Code Council [ICC] chapters, staff for other utility programs, former program participants) and consider expanding efforts to other groups (e.g., regional planning boards or the Air Resource Board) and directly to jurisdictions implementing climate action plans (CAPs) or other sustainability initiatives.
- Subprogram staff should begin tracking where participants learn about the Subprogram services. Use this information to develop an outreach plan that increases the network of effective referral resources. In addition, investigate ways to educate these third parties so they can more effectively support the Subprogram.
- If the IOUs are interested in creating greater awareness of the Subprogram, consider providing an introduction letter or packet to distribute to jurisdiction staff members who express interest in a reach code. It could include a list of the Subprogram's services and clearly indicate that they are provided by the IOUs. This information would serve to not only better inform participants about the Subprogram's services, but help create more referral sources and increase recognition of the Subprogram among its participants.

2. Subprogram Description

Subprogram Goals and Objectives

The goal of the Reach Code Subprogram was to achieve the 2010–2012 program performance metric, which included 32 jurisdictions statewide with CEC-approved reach codes by the end of 2012.

The Subprogram's objectives are:

- To provide jurisdictions with the support and resources they need to develop and adopt CEC-approved reach codes.
- To reduce the amount of duplicated efforts between jurisdictions and their subsequent costs.
- To support uniformity of reach codes among jurisdictions.
- To provide jurisdictions with solid, credible information for their decision of whether to pursue a reach code.

Management and Implementation

The Subprogram is co-managed by staff from each of the IOUs (SCE, PG&E, Southern California Gas Company, and SDG&E). In addition, two independent consultants (Misti Bruceri of Bruceri and Associates and Mike Gable of Gabel and Associates) are actively involved in managing and implementing the Subprogram. The staff from SCE serves as the unofficial team lead. The management team, often including the consultants, has weekly conference calls and works together to develop and provide Subprogram resources.

Utility Staff Members' Roles: Each utility implements the Subprogram independently in its own jurisdictions. The consultants have a separate contract with each IOU. For each utility, Subprogram staff members are responsible for outreach to their jurisdictions, coordinating presentations with third-party organizations, and directing the consultants work in their territories.

Consultants' Role: The consultants have an active role in managing and implementing the Reach Code Subprogram. In addition, one of the consultants developed cost-effectiveness studies for each of the 16 California climate zones, and is the primary resource for technical assistance to the jurisdictions. The other consultant conducts outreach to local governments, provides jurisdictions with guidance in the reach code process, and maintains the *Reach Code Participating Jurisdictions Statewide* spreadsheet.

Subprogram Tracking

One of the Subprogram consultants is responsible for tracking the Subprogram activities in the *Reach Code Participating Jurisdictions Statewide* spreadsheet. The data tracked include the city/county name, initial contact's information, and primary contact's information, and indicate which of the following Subprogram services were provided: the cost-effectiveness study, guidelines/roadmap, ordinance

review, support preparing the CEC package and other technical support, and the date the reach code received CEC approval.

Subprogram Delivery

Outreach and Recruiting

Members of the Subprogram management team (IOUs and consultants) reach out to code officials and other staff at jurisdictions to educate them about the benefits of adopting a reach code and about the Subprogram services available. They conduct most of the outreach through presentations to members of industry and other pertinent organizations, including those from local government partnerships and ICC chapters. They often conduct presentations in conjunction with staff from other utility programs and the CEC. The IOUs also rely on other parties who do not work for the Subprogram to refer staff from jurisdictions interested in a reach code to the Subprogram. These parties include, but are not limited to, staff from other utility programs, local government affairs, ICC, and the CEC.

Participant Support

The Subprogram management team provides participants with support and resources to help jurisdictions decide whether to pursue a CEC-approved reach code and submit reach codes for CEC approval. Participants primarily work with the Subprogram management team over the phone or through e-mail, except when members of the Subprogram management team need to be present for a meeting or presentation.

Providing Information

The Subprogram management team responds to requests to provide background and technical information to jurisdictions' staff and other stakeholders to inform their decision to pursue a CEC-approved reach code. These Subprogram activities include:

- Making presentations about reach codes to jurisdiction stakeholders, staff, and officials.
- Attending public and city council meetings to respond to technical questions about reach codes.
- Being available to answer questions and provide information and resources as requested.

Supporting Jurisdictions to Adopt Reach Codes

The Subprogram management team provides resources, guidance, and technical assistance to support jurisdictions to develop reach codes and submit them for CEC approval.

- Resources include:
  - *The Roadmap for Local Governments and Local Energy Efficiency Ordinance Policy Options and Guidelines*, which overviews the processes to develop and adopt a reach code;
  - Climate zone-specific cost-effectiveness studies to meet the CEC cost-effectiveness requirement;

- Sample ordinances; and
- A template of the reach code package submitted to the CEC.

- Other support and technical assistance includes:
  - Reviewing reach codes prior to CEC submission;
  - Preparing reach code submission packets; and
  - Guiding jurisdictions through the process of submitting their reach code to the CEC.

Cost Effectiveness Studies

The most common way the Subprogram management team supports jurisdictions is providing them with a climate zone-specific cost-effectiveness study that meets the requirements of the CEC. In the past, the biggest barrier to jurisdictions interested in adopting a CEC-approved reach code had been their ability to obtain the cost-effectiveness study required for CEC-approval. To address this issue the Subprogram management team developed standard climate zone specific cost-effectiveness studies of codes that exceed the California 2008 energy code, had them preapproved by the CEC, and provided them to any jurisdiction interested in adopting a reach code.

Coordination with Other Programs and Organizations

The Subprogram management team coordinates much of the Subprogram outreach in conjunction with other programs and organizations, such as other IOU rebate programs that promote building energy efficiency, and they provide joint presentations that include the other IOUs' information. The Subprogram management team also works closely with CEC staff to support jurisdictions in the reach code process.

3. Process Evaluation

Process Evaluation Methodology

Cadmus interviewed Subprogram management team members and reviewed a variety of materials for the Reach Code Subprogram process evaluation.

Materials Review

Cadmus reviewed the following materials to understand the Subprogram goals and processes:

1. Southern California Edison, *Program Implementation Plan, 2010 – 2012 Energy Efficiency Plans*. January 2011(PIP).
2. Southern California Edison, *Reach Code Logic Model, Program Implementation Plan, 2010 – 2012 Energy Efficiency Plans*. January 2011(PIP), page 749. January, 2011.
3. Codes and Standards PY2013 – 2014 Compliance Improvement Subprogram Logic Model.
4. June 10, 2010 New Construction_ CS Reach Code Update. Provided in response to Cadmus' June 2010 data request.
5. Mariscal, Javier. Southern California Edison. Kern County Energy Leadership Partnership, 5-11-11 presentation.
6. Local Government Energy Efficiency Best Practices newsletter. Published in summer 2010.
7. Notes from interviews on the Extension of Advocacy Subprogram with Jill Marver of PG&E, Javier Mariscal of SCE, and Misti Bruceri of Misti Bruceri and Associates, LLC, implemented for the 2010–2012 California Statewide Codes and Standards Program process evaluation.
8. Southern California Edison Company, Pacific Gas & Electric, Southern California Gas Company, and San Diego Gas and Electric. Reach Code Participating Jurisdictions Statewide. Spreadsheet. April 11, 2012.
9. Nadig, Charles. Southern California Edison. Savings by Design and California Advanced Homes Program. Presentation for reach code meeting, May 11, 2012.
10. City of Beaumont. *Statewide Code and Standards Reach Code Program*. January 17, 2012.
11. Gabel and Associates, LLC. *Climate Zone 12 Energy Cost-Effectiveness Study*. April 12, 2010.
12. Build It Green and Statewide Codes and Standards Program. *Roadmap for Local Governments; Guidance for Developing a Residential Green Building Ordinance*. June 1, 2011.
13. Gabel and Associates and Bruceri and Associates, LLC. *Local Energy Efficiency Ordinance Policy Options and Guidelines*. September 28, 2010.
14. California Public Utility District. Memo: *Response to Data Request Number 8: C&S Program Evaluation PY 2010- 2012*. April 3, 2012.

Interviews

For the process evaluation, Cadmus interviewed Subprogram management team staff and staff from participating jurisdictions (who the IOUs indicated had received Subprogram support). Cadmus interviewed Subprogram management team staff first to gain a better understanding of the Subprogram. The interviews focused on understanding the Subprogram objectives, goals, metrics, tracking, activities, participants, participant recruitment, strengths, and areas for improvement. We used the information gathered from those interviews to inform the interview guides we created for participating jurisdictions.

Participating jurisdictions included two groups: 1) jurisdictions that received Subprogram support and adopted a CEC-approved reach code and 2) jurisdictions that received Subprogram support but did not ultimately pursue adopting a CEC-approved reach code.

Cadmus intended to interview staff from 10 participating jurisdictions with CEC-approved reach codes and at five jurisdictions without CEC-approved reach codes. Cadmus also attempted to interview a representative sample in each group from the northern and southern parts of the state to address potential regional differences between jurisdictions. We divided the jurisdictions in each group into northern and southern location groupings and, based on the ratio, identified a target number of jurisdictions from each region to interview. We then called jurisdictions in random order until we had interviewed the target number of jurisdictions in each category, or, as happened with northern jurisdictions without a CEC-approved reach code, we exhausted the entire list and instead reached out to the southern jurisdictions to obtain the targeted number of participants overall. Table 3 shows the number of jurisdictions interviewed.

Table 3: Jurisdictions Interviewed

Jurisdiction Status	Total Interviewed	Total from the North	Total from the South
With CEC-approved reach codes	11	8	3
Without CEC-approved reach codes	5	0	5

Table 4 summarizes the interviews we conducted for the process evaluation.

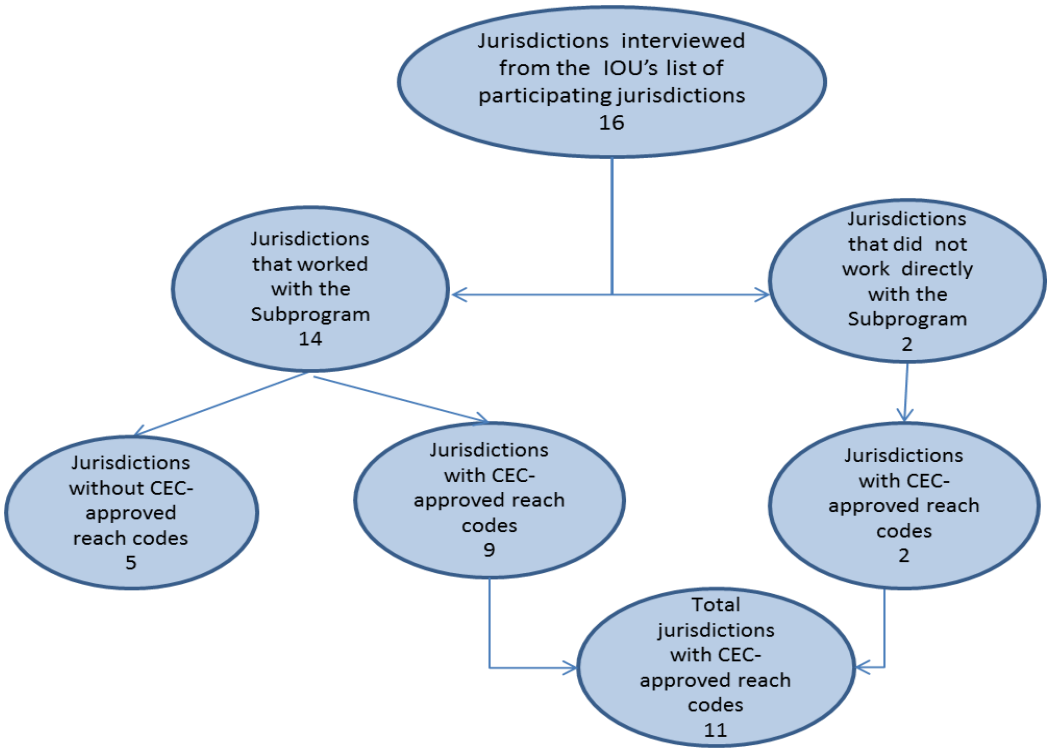
Table 4: Process Evaluation Interviews

Group	Number of Interviews Conducted	Description
Subprogram management team	5	Three IOU program staff and two consultants who work closely to manage and implement the Reach Code Subprogram.
Staff from jurisdictions with CEC-approved reach codes	15	Staff members from 11 jurisdictions with CEC-adopted reach codes; 11 staff members who led the effort in their jurisdiction and four staff members who assisted in the process.
Staff from jurisdictions with CEC-approved reach codes (data interview)	2	Staff members responsible for tracking energy savings or greenhouse gases but who were not involved in developing or adopting the reach code.
Staff from jurisdictions without CEC-approved reach codes	6	Staff members from five jurisdictions that received support from the Subprogram but whose jurisdiction did not adopt a CEC-approved reach code; five staff members who led the effort and one staff member who assisted in the process.
CEC staff	1	A CEC staff member who is responsible for working with the jurisdictions pursuing CEC approval for reach codes.

Jurisdiction Profiles

Cadmus interviewed 21 staff members from 16 jurisdictions indicated on the list of participants provided by the IOUs. Jurisdictions interviewed fell into several categories, as summarized in Figure 1. Staff at two jurisdictions with CEC-approved reach codes indicated that they did not have any interaction with the Reach Code Subprogram staff but had been given a copy of a climate zone-specific cost-effectiveness study from the Subprogram by a third party. Figure 1 shows these jurisdictions as those that did not work directly with the Subprogram.

Figure 1: Jurisdiction Categories



In addition, five of the 16 jurisdictions indicated they had worked with other jurisdictions in their region to attempt to adopt a reach code that was consistent across their jurisdictions. Four of these are counted among the jurisdictions that have CEC-approved reach codes and they include one of the jurisdictions that did not work directly with the Subprogram. The fifth jurisdiction that worked with a regional group is a jurisdiction without a CEC-approved reach code.

Process Evaluation Findings

This section presents our key findings from the interviews and material reviews for the process evaluation of the Reach Code Subprogram.

Subprogram Goals and Objectives

The interviewees from the Subprogram management team confirmed that the primary goal of the Reach Code Subprogram is for 32 jurisdictions to have CEC-approved reach codes by 2012. As of April 2012, the Subprogram had assisted 33 jurisdictions that had adopted a reach code.[5]

[5] Southern California Edison Company, Pacific Gas & Electric, Southern California Gas Company, and San Diego Gas and Electric. Reach Code Participating Jurisdictions Statewide. Spreadsheet. April 11, 2012.

The PIP states the objectives of the Subprogram are:

- To provide jurisdictions with the support and resources they need to develop and adopt CEC-approved reach codes.
- To reduce the amount of duplicated efforts between jurisdictions and their subsequent costs.
- To support uniformity between reach codes among jurisdictions.

In addition, members of the Subprogram management team also said that providing jurisdictions with information to inform their decision of whether to pursue a reach code was one of their objectives. Findings related to these objectives are included in this report.

Differences between Subprogram Implementation and PIP Description

Cadmus identified several differences between the description of the Reach Code Subprogram in the PIP and how it is implemented (Table 5).

Table 5: PIP Description of Subprogram versus Subprogram Implementation

Subprogram Activity Described in the PIP	Subprogram Activity as Implemented
Encourage jurisdictions to optimize compliance with the existing codes prior to adopting a reach code.	The Subprogram management team informally encourages jurisdiction staff to attend trainings aimed at improving compliance provided through other IOU programs. However, optimizing compliance does not appear to be systematically emphasized as a part of the Reach Code Subprogram.
The IOUs will request that prior to adopting any new codes, building department staff attend role-based training, as well as relevant measure-specific training (HVAC replacements, controls under skylights, etc.), and that they identify, implement, and document two actions designed to increase compliance.	The Subprogram management team shares information with the jurisdictions regarding the trainings available to improve enforcement of the current code, but does not request jurisdictions to take any actions prior to their receiving support from the Subprogram or to adopting a reach code. [6]
Document the successes and barriers experienced by the participating jurisdictions in the adoption and implementation of reach codes.	The Subprogram management team is not involved in implementing reach codes in jurisdictions and does not keep any documentation regarding the jurisdictions' experiences adopting a reach code.

[6] During 2012, the IOUs offered code training to building departments to improve code enforcement through the Extension of Advocacy Program.

Logic Model

The PIP does not include a theory for the Reach Code Subprogram, but does include a diagram of the logic model. The logic model does not clearly reflect the Subprogram as implemented. For example, the logic model indicates that the Subprogram activities support compliance education and training, which they do not.

However, Cadmus was provided with the *Codes and Standards PY2013 – 2014 Logic Models revised,* which includes the Reach Codes Subprogram Logic Model and program theory. Cadmus found that this logic model more closely reflects the Reach Code Subprogram as it was implemented. For example, the revised logic model correctly indicates the Reach Code Subprogram objectives and more accurately reflects the Subprogram activities and stakeholder roles.

Subprogram Design

The IOUs effectively designed the Subprogram to meet the objective of providing jurisdictions with the support and resources they need to develop and adopt a CEC-approved reach code. When Cadmus asked if there were any resources or support that would have been helpful, but were not available, staff at only three of the 16 jurisdictions had suggestions. One said they would like specific information on what other jurisdictions were doing, and one indicated they would have liked more factual data about the impacts adopting a reach code would have on building costs and energy usage. One interviewee, and the only one from a jurisdiction without a CEC-approved reach code, said they would have liked more outreach.

It was noted by several members of the Subprogram management team that the Subprogram intentionally does not attempt to influence jurisdictions' decision to adopt a reach code and none of the interviewees from participating jurisdictions indicated that the Reach Code Subprogram had advocated for the adoption of a reach code in their jurisdiction. However, the Subprogram staff does attempt to provide jurisdictions with information during their local process, and members of the Subprogram management team will make presentations to city staff and stakeholders and attend meetings to provide technical support.

Subprogram staff does not track whether the Subprogram is meeting its objectives other than documenting the number of jurisdictions the Subprogram has assisted to adopt a CEC-approved reach code. The Subprogram management team tracks this information in the *Reach Code Participating Jurisdiction Statewide* spreadsheet. The Subprogram management team does not track their outreach activities promoting the Subprogram, their attendance at jurisdiction meetings, or other activities the Subprogram staff provide to the jurisdictions.

Subprogram Delivery

Subprogram Management

All of the Subprogram management team interviewees (including the consultants) reported that the Subprogram management team is effective and the team works well together. One member of the Subprogram management team commented that they: "are all looking for a common goal," and "want the Reach Code [Sub]program to be as effective as possible;" another noted: "as far as working together, it is exceptional."

The majority of the interviewees at the participating jurisdictions were not aware that the services they received were part of a program and, therefore, were not asked about the IOUs' management of the Subprogram.

Subprogram Staffing

The jurisdiction interviewees reported that the Subprogram management team had met their needs, but additional staff could be necessary for the Subprogram to work with a larger number of participating jurisdictions.

Nineteen of the jurisdiction staff members interviewed had worked directly with members of the Subprogram management team. Nine of these interviewees mentioned that the members of the Subprogram management team were responsive and accessible. However, two interviewees also qualified their response, indicating that the member of the Subprogram management team they worked with was very busy. In addition, one member of the Subprogram management team mentioned that they had not fully promoted the Subprogram services out of concern that they would not have the resources to deliver them.

Subprogram Management Team's Implementation and Delivery of Services

All 19 of the interviewees from jurisdictions who worked with members of the Subprogram management team indicated that Subprogram implementation had gone well. Twelve interviewees reported that the Subprogram implementation was effective, with comments including: "extremely effective," "it was easy," and "they just made themselves accessible." When we asked about the best aspect of working with the Reach Code Subprogram, 11 of the 19 interviewees said it was how responsive and accessible the Subprogram management team was, and seven said it was how knowledgeable the team was. One interviewee commented that the Subprogram management team had: "made it easy for us and provided us with the experts we needed, which was important for a small jurisdiction."

Subprogram Introduction

Interviewees from jurisdictions reported they most commonly heard about the Subprogram services through a third party, followed by attendance at a presentation or workshop from a member of the

Subprogram management team. Table 6 lists the ways interviewees first heard about the Subprogram services.

Table 6: How Jurisdictions Were Introduced to the Reach Code Subprogram Services

Referral Resource	Jurisdictions (n=16)	Additional Details
Third party	7	One was referred by a local government program; one was referred by someone at their ICC chapter; one was referred by an IOU staff person not with the Subprogram; one was referred by a friend in the industry; one was referred by the CEC; and two indicated they had been told by a third party but could not remember who it had been.
Regional group	3	For these three participants, someone else in their regional group had connected them with the Subprogram.
Presentation or workshop	4	One heard about it at an ICC chapter meeting; one at a local government program presentation; and two did not specify the sponsor of the presentation or workshop where they heard about the Subprogram.
CEC website	1	This participant found a Subprogram consultant's name on the CEC website.
Other	1	One participant had a previous relationship with one of the Subprogram consultants and learned of the Subprogram through them.

Subprogram Branding

Staff members at the participating jurisdictions with CEC-approved reach codes who had worked with the Subprogram had very little awareness of the Subprogram: out of 13 interviewees who responded, only five said they recognized it as a program, and only three knew it by name. Six interviewees indicated that their only impression of the Subprogram or its' services came from their working with a member of the Subprogram management team who was not a direct employee of the IOUs. However, three of these interviewees did indicate that one of the IOUs had paid for some of the consultant's time.

Three interviewees were totally unaware of the Subprogram and its services. One interviewee said they had received support through an informal relationship with an individual on the Subprogram management team. Two interviewees said they had been sent the cost-effectiveness study by a third party and were not familiar with the Subprogram or Subprogram management team at all.

Staff members from the jurisdictions without CEC-approved reach codes were more aware of the Subprogram. Only one of these six interviewees reported not knowing it was a program, while five attributed the services they had received to the Subprogram and knew it by name.

Coordination with the CEC

CEC staff and members of the Reach Code Subprogram management team reported having a good relationship and working together to help jurisdictions successfully adopt CEC-approved reach codes. In addition, both the CEC staff and a member of the Subprogram management team said that they confer on ways to improve the reach code adoption process and to better support the jurisdictions.

Program Tracking

Based on the material reviews and interviews with the Subprogram management team, the Subprogram stakeholders track the necessary information to monitor whether the program is meeting its goal of 32 jurisdictions that adopt CEC-approved reach codes. However, none of the Subprogram management team indicated tracking any of the program activities beyond the Subprogram tracking sheet, and they could not connect activities to the success of the Subprogram or show their value in meeting the Subprogram's other objectives.

Cadmus did not directly ask the jurisdictions whether they had tracked their interactions with the Subprogram, and they did not say anything during the interviews to indicate that they tracked this information.

Jurisdictions' Development and Adoption Process

Why Jurisdictions Pursue a Reach Code

Interviewees from participating jurisdictions gave a variety of responses about why their jurisdictions had chosen to pursue a reach code (see Table 7).

Table 7: Why Jurisdictions Chose to Pursue a Reach Code*

Reason	Jurisdictions With CEC-approved Reach Codes (n=11)	Jurisdictions Without CEC-approved Reach Codes (n=5)
To reduce greenhouse gases or support a carbon emissions action plan	7	0
To show the community's commitment to sustainability	7	0
To be seen as leader	4	1
To create regional consistency in the building codes	3	1
To respond to state actions	3	0
To keep up with other jurisdictions in the region	2	1
To support another municipal goal (e.g., green building ordinance or sustainability goals set with a local government program)	2	2

*Interviewees provided multiple responses.

When we asked the Subprogram management team and CEC staff the most common reasons that jurisdictions pursue a CEC-approved reach code, three said it was to be seen as a leader, two said it was

to support the jurisdiction's carbon action plan or other green ordinance, and two said it was to meet state requirements.

Jurisdictions' Process to Develop and Adopt a CEC-approved Reach Code

All the interviewees from jurisdictions with CEC-approved reach codes indicated that one individual in their jurisdiction was responsible for facilitating the process to develop and adopt a CEC-approved reach code. The interviewees from the four jurisdictions that worked with regional groups all reported that the group worked together to develop a reach code that could be adopted in each of their jurisdictions. The other jurisdictions all developed the scope of their reach codes in-house, with each one having different parties and processes than the others. Some jurisdictions involved interdepartmental committees, while others worked with various staff, city council, and/or community stakeholders.

Only one interviewee from the jurisdictions without CEC-approved reach codes reported that the jurisdiction's reach code had been formally presented to the city council in a first reading. Interviewees from the other jurisdictions without CEC-approved reach codes reported that their jurisdictions had terminated their efforts earlier in the process.

Influences on the Scope of Reach Code

Interviewees indicated a variety of influences that affected what types of buildings they included in their reach code, along with the triggers for including renovations and additions (Table 8)**.** The most common influences cited were industry stakeholders and what had been done in other jurisdictions.

Table 8: Influences on the Scope of Reach Codes*

Influence	Jurisdictions (n=16)
Industry stakeholders (architects, developers, builders, etc.)	10
Other jurisdictions' scope	7
Various local government departments or entities (including staff in development and planning; the city attorney, city manager, and city councils; and interdepartmental environmental or sustainability committees)	6
Available rebates	3
Content of cost-effectiveness study	2

*Interviewees provided multiple responses.

One interviewee from a jurisdiction with a CEC-approved reach code reported that the scope of their reach code was proposed and written by a local environmental group. One interviewee said that the local chamber of commerce exerted influence, and another reported that commercial real estate agents had been actively engaged in developing the scope for the code regarding commercial alterations or additions.

Regional Groups

Interviewees from five jurisdictions (four with CEC-approved reach codes and one without a CEC-approved reach code) reported that they had worked with others in their region to develop a single reach code in order to have consistent requirements across their jurisdictions. Four of these interviewees reported that their group also included industry stakeholders from throughout the region. One of the interviewees said they had worked with a group through a local government partnership. Two interviewees indicated that they had to convince their city council of the benefits of having consistent requirements regionally in order to dissuade the council from trying to go beyond the code and outdo the other jurisdictions in their region.

Challenges to Developing and Adopting a Reach Code

The majority of the interviewees from the participating jurisdictions indicated that the biggest challenge to developing and adopting a reach code was gaining the support of the elected officials. Four out of five of the Subprogram management team members agreed that building this political support was the biggest challenge faced by jurisdictions. All of the cited challenges are summarized in Table 9.

Table 9: Jurisdictions' Barriers and Challenges to Adopting Reach Codes*

Barrier to Adopting Reach Codes	Interviewees From Jurisdictions With CEC-approved Reach Codes (n=15)	Interviewees From Jurisdictions Without CEC-approved Reach Codes (n=6)
Lack of support from elected officials	9	4
Staff time to develop them	5	2
Educating staff and city council	5	N/A
Defining the scope	5	N/A
Concern about implementing new codes	1	2
Held off because of upcoming code changes	N/A	3

*Interviewees provided multiple responses.

Table 10 summarizes the reasons interviewees from jurisdictions without CEC-approved reach codes said that their jurisdictions' elected officials chose not to pursue a CEC-approved reach code.

Table 10: Reasons Jurisdictions Did Not Adopt Reach Codes*

Reason Jurisdiction did not Adopt Reach Codes	Number of Responses (n=5)
Not cost-effective in current economy	3
Too close to new code cycle	3
Concern over jurisdiction's ability to implement it	1
Could not prove the scope was cost-effective for CEC approval	1
Too time consuming to develop and adopt	1

*Interviewees provided multiple responses.

Support for Jurisdictions' Development and Adoption of Reach Codes

Support Provided Through the Reach Code Subprogram

Interviewees from all 11 of the jurisdictions with CEC-approved reach codes, and interviewees from four of five of the jurisdictions without CEC-approved reach codes, reported receiving a cost-effectiveness study. The support participating jurisdictions received as reported by the interviewees is summarized in Table 11.

Table 11: Support Received by Jurisdictions*

Type of Support Interviewee Indicated Receiving from Subprogram	Number of Jurisdictions With CEC-approved Reach Codes (n=11)	Number of Jurisdictions Without CEC-approved Reach Codes (n=5)
Climate zone-specific cost-effectiveness study	11	4
General guidance	5	2
Technical assistance	4	3
Subprogram management team met with staff or attended public meetings	3	3
Financial support for staff or consultant time	3	1
Draft ordinance	2	2
Gathered stakeholder input	1	2
Reviewed ordinances	2	N/A
No support other than the cost-effectiveness study	2	1

*Interviewees provided multiple responses.

Based on the data in Table 11, it appears the jurisdictions that did not adopt a CEC-approved reach code received a wider range of support more often than those jurisdictions that did get CEC approval. Because there was less political support for the adoption of a reach code in these jurisdictions, it is possible there were more opportunities for the Subprogram staff to provide services.

When Cadmus asked interviewees from jurisdictions that adopted a CEC-approved reach code what barriers the Subprogram had helped them overcome to develop and adopt a reach code, three out of

nine respondents indicated the Subprogram had provided the cost-effectiveness study, three said the Subprogram helped them address concerns regarding the cost-effectiveness of a reach code, and one said that the Subprogram had provided funding to pay for the jurisdiction staff's time to support a reach code process (which may have been a misunderstanding on the part of the interviewee as funding was not offered as part of the Subprogram). Two said that the Subprogram had not directly addressed a barrier to the development or local adoption of a reach code in their jurisdictions.

Support from Other Resources

The Subprogram management team indicated that they were not aware of any other consultants or other organizations offering services similar to those available through the Subprogram, and the interviewees from the jurisdictions did not mention any other similar services.

However, seven interviewees from the participating jurisdictions indicated that stakeholders had provided some resources or assistance in the development of their reach code: four mentioned builders and developers, three indicated architects, and two mentioned a local government partnership, home energy service raters, environmental groups, realtors, building officials, and other jurisdictions. Two interviewees reported that stakeholders had actively supported the adoption of their reach code. One interviewee said that the local government partnership had organized both a stakeholder workshop and an educational session with decision-makers and staff.

In addition, interviewees from six of the 16 jurisdictions indicated they had received some assistance from the CEC. CEC staff reported that they had reviewed 70% to 80% of the jurisdiction ordinances.

Public Opposition to Reach Code in the Jurisdictions

Most of the interviewees from the participating jurisdictions reported receiving little or no local opposition. Interviewees from only six jurisdictions reported any public opposition to the adoption of a reach code: two cited opposition from building associations, one mentioned commercial realtors, and three indicated some opposition from specific individuals. Of the six jurisdictions, four are in northern California and two are in southern California.

Jurisdiction Metrics and Tracking

No one on the Subprogram management team was aware of the jurisdictions keeping any energy-savings data relative to the reach codes, and no one interviewed from the jurisdictions reported tracking any metrics to measure the impact of their work with the Subprogram or of having a reach code. In general, jurisdictions tracked only the minimum data necessary (number of buildings permitted) and many have antiquated databases that makes pulling other data difficult (if at all possible). Staff members from seven out of 16 jurisdictions reported tracking the greenhouse gases (GHG) in their jurisdiction; however, in all cases the GHG data was based on gross utility data and could not be tracked to a specific program. The interviewees' responses regarding the data tracked in their jurisdictions are summarized in Table 12.

Table 12: Data Tracked by Jurisdictions

Tracked Item	Jurisdictions With CEC-approved Reach Codes (n=11)	Jurisdictions Without CEC-approved Reach Codes (n=5)
Impacts of reach code	0	N/A
Greenhouse gases based on utility information*	6	1

Impact and Benefits of a Reach Code to Jurisdictions

When we asked how having a reach code affected energy code enforcement in their jurisdiction, five of the 10 interviewees who responded reported it had not changed it, two said it had increased their focus on enforcing the energy codes, and three said they could not tell if it made a difference.

When we asked what the benefits of having a reach code in their jurisdiction were, all but one interviewee identified specific positive impacts. These responses are summarized in Table 13.

Table 13: Benefits of a Reach Code*

Benefit	Interviewees (n=15)
Better and more energy-efficient buildings	5
Shows the community's commitment to sustainability	5
Reflects the community's leadership	3
Helps meet the community's climate change goals or reduces emissions	5

*Interviewees provided multiple responses.

Seven of 13 interviewees with the jurisdictions with CEC-approved reach codes who responded indicated there were also negative impacts to having a reach code. These responses are summarized in Table 14.

Table 14: Negative Aspects of a Reach Code*

Negative Aspect	Interviewees (n=13)
Increases costs and time for developers	3
The perception that will increase costs	2
Creates inconsistencies between jurisdictions	2

*Interviewees provided multiple responses.

4. Pilot Impact Evaluation

Summary of Findings

Cadmus conducted a pilot impact evaluation of the Reach Code Subprogram. We found that the California Codes and Standards Program evaluation protocol for program years 2006-2008 (Protocol) is conceptually applicable to the Reach Code Subprogram. However, it was not possible to apply the Protocol to verify the IOUs' savings calculations because these calculations were based on secondary data sources and the estimates did not meet the Protocol requirements.

We also found that the IOUs had not calculated claimed savings, but had calculated approximate projected savings in order to understand the Subprogram's potential impact. We determined that the use of secondary data was acceptable for the purpose declared by the IOUs as the actual data for each jurisdiction were not readily available and, even if currently available, could be expensive to obtain.

Cadmus' evaluation did not include a complete attribution analysis of all factors that contribute to a jurisdiction's adoption of a CEC-approved reach code, but Cadmus did find that the Subprogram's activities were extremely important to the crucial step of jurisdictions receipt of CEC approval for their reach code. In fact, 80% of the jurisdictions interviewed indicated they would not have been able to adopt a CEC-approved reach code without a cost-effectiveness study provided by the Subprogram at that step in the process.

Pilot Impact Evaluation Methodology

Cadmus conducted interviews and reviewed pertinent materials to conduct the pilot impact evaluation of the Reach Code Subprogram.

Interviews

Cadmus used the process evaluation interviews with the Subprogram management team and staff at participating jurisdictions to inform the pilot impact evaluation. In addition, we interviewed the consultant involved in calculating the Reach Code Subprogram energy savings to understand: 1) the methodology applied to the calculations; 2) how the Codes and Standards Evaluation Protocol informed this methodology; and 3) challenges applying the Codes and Standards Evaluation Protocol.

Materials Review for Impact Evaluation

In addition to the materials we reviewed for the process evaluation, Cadmus reviewed the following materials to inform the pilot impact evaluation:

- The TecMarket Works Team. *California Energy Efficiency Evaluation Protocols: Technical, Methodological, and Reporting Requirements for Evaluation Professionals*. April 2006. (C&S Evaluation Protocol).
- Heschong Mahone Group, Inc. *Memorandum to the Statewide C&S Group, from IOU 2010-12 Reach Code Sub-program Savings Estimates.* April 27, 2011.
- Heschong Mahone Group, Inc. *Projected Savings from Reach Code Programs.* April 27, 2011.
- Databases of IOU program participants provided by DNV KEMA.
- Permit data provided by participating jurisdictions with CEC approved reach codes.
- Cadmus. *Memorandum the Proposed Cadmus Attribution Methodology (Revised).* March 9, 2009.

Methodologies for the Pilot Impact Evaluation of the Subprogram

Cadmus used the following methodologies to meet the pilot impact evaluation objectives.

Applicability of the Codes and Standards Evaluation Protocol to the Subprogram

To assess the applicability of the Protocol to the Reach Code Subprogram, Cadmus reviewed the Protocol to understand to apply it, taking into consideration the modifications Cadmus and DNV KEMA made to the Protocol in the process of conducting the codes and standards impact evaluation.

Cadmus determined that the Protocol does not directly address reach codes or similar programs. Therefore, we identified the inputs required by the Protocol for calculating the energy savings of other types of programs, and assessed whether they could be applied to the Reach Code Subprogram.

Applicability of Methods Used to Calculate Savings

Cadmus compared the methodology used by the IOUs to calculate the Subprogram energy savings to the *C&S Impact Evaluation Protocol* as implemented in the 2006 – 2008 Codes and Standards evaluation to asses if the methodology was applicable. Cadmus then compared the inputs required by the Protocol for calculating program energy savings to those used by the IOUs and assessed whether they were reasonable given the goals and circumstances of the Reach Code Subprogram.

Method for Assessing the Attribution

To implement a full attribution assessment, Cadmus would identify and assign weights to all of the factors that contribute to a jurisdiction adopting a CEC-approved reach code, and then assess the Subprogram's contribution to each factor. However, due to limited resources and early study findings, we used a simplified method that provided qualitative information on the importance of different

contributors to the development and adoption process and focused the quantitative assessment on the Subprogram's contribution to jurisdictions obtaining CEC-approval for their reach code.

Cadmus had originally planned to use an approach to assess the Subprogram's attribution to three factors of jurisdictions' development and adoption of a reach code: development of the reach code; its local adoption; and receiving CEC approval. The process evaluation identified the need for a CEC-approved cost-effectiveness study as one of two primary barriers to jurisdictions successfully adopting a CEC-approved reach code. The other major barrier was that jurisdictions had to have the political support to adopt a reach code locally. However, Cadmus found the Subprogram intentionally did not attempt to influence jurisdictions to pursue local adoption. Therefore, we focused the assessment of the Subprogram's attribution on the process of jurisdictions obtaining CEC-approval. We determined that the Subprogram's attribution to jurisdictions obtaining CEC-approval for their reach code was a meaningful implication of the Subprogram's attribution.

Methodology to Estimate Double-Counted Energy Savings

The PIP states that "[i]n a jurisdiction with a reach code, savings resulting from participants in the relevant incentive or rebate program (new construction or retrofit) will be claimed by that program, consistent with current practice."[7] However, the methodology the IOUs applied to calculate the Reach Code Subprogram energy savings did not discount the savings estimates to account for double counting.

To estimate the impact of possible double counting, Cadmus first identified the IOU programs that could claim savings for projects built under a reach code. We then compared their participant lists to permit data from a sample of jurisdictions. Based on the percentage of projects permitted under a reach code that received rebates under other IOU programs, we estimated the potential impact of eliminating any double counting on savings attributable to the Reach Code Subprogram.

Cadmus attempted to evaluate the potential for double counting in 15 jurisdictions. Cadmus requested permit information from interviewees at all 11 of the jurisdictions with CEC-approved reach codes, asking for permit date, address, and category (residential or nonresidential, new construction, renovation, etc.) for all building permits provided since their jurisdiction adopted a reach code. We followed up with interviewees from jurisdictions that did not provide data or whose data did not include an adequate level of detail. We received useable data from nine of the 11 participating jurisdictions with CEC-approved reach codes. We also reviewed permit data from two additional jurisdictions with reach codes that we had collected for the codes and standards impact evaluation, as well as data from two jurisdictions that we obtained from building department websites.

[7] Southern California Edison, *Program Implementation Plan, 2010 – 2012 Energy Efficiency Plans*. January 2011. Page 689.

Of the 13 jurisdictions' data we were able to obtain, only six included the information necessary to identify all of the projects in the jurisdiction that were required to meet their reach code and that had been double counted. Cadmus compared the permit data to the participants in the IOUs' programs for these jurisdictions and found overlap between them for one project out of 9,926; indicating that the potential impact of double counting is negligible.

Table 15: Permit Data Available

Jurisdiction	Year Adopted	Total Number of Permits	Number of Permits Required to Meet Reach Code	Number With a Claimed Rebate in Another Program
1	2009	796	784	1
2	2011	95	2	0
3	2012	228	13	0
4	2011	6,550	243	0
5	2010	1,513	29	0
6	2011	744	4	0
Total	N/A	9,926	1,075	1

In an attempt to find options to increase our potential data sample, Cadmus assessed whether we could estimate double counting by comparing the number of projects rebated by other IOU programs for the ZIP code of a jurisdiction with a reach code to the number of permits issued in that jurisdiction under the reach code. However, this approach was not effective because we could not determine whether the building projects that had received rebates had been permitted before or after the jurisdiction had adopted the reach code.

Possible Revisions to the Codes and Standards Evaluation Protocol

Cadmus combined the data from interviews, the materials provided, our knowledge of attribution, and the Protocol to assess the possibility of revising the Codes and Standards Evaluation Protocol in order to apply it to the Reach Code Subprogram.

Pilot Impact Evaluation Findings

This section presents Cadmus' findings from our analysis of the interviews and material reviews for the pilot process evaluation of the Reach Code Subprogram.

Findings on the Applicability of the Protocol to the Subprogram

Cadmus determined that all of the inputs required by the Protocol are applicable to the Reach Code Subprogram, although no section of the Protocol is directly pertinent to conducting an impact evaluation of the Subprogram. We also determined that some of the data required for those inputs is not readily available. Table 16 summarizes the required inputs from the Protocol, their applicability to the Subprogram, and whether it was feasible to obtain the data required for this evaluation.

Table 16: Applicability of the *Protocol* to the Reach Code Subprogram

Evaluation Input	Inputs	Applicability	Feasibility
Gross Savings (the total amount of energy that could be saved by a reach code)	• Records of the energy usage of buildings built to the reach code. • Percentage of buildings that are not built to code and the energy-efficiency impact. • Baseline energy usage of actual building activity had it been built to Title 24 requirements.	All inputs required to calculate gross savings are applicable to the Subprogram.	Calculating the gross savings using actual data would have been unfeasible for this Subprogram evaluation cycle. Many of the jurisdictions with reach codes do not track compliance rates or energy usage for their jurisdiction.
Naturally occurring market adoption (NOMAD)	• Trends in the market (market adopting of energy-efficient technologies and building techniques, etc.) • Energy savings that would have occurred without the new code.	All inputs required to calculate NOMAD are applicable to the Subprogram.	It was not feasible to calculate NOMAD. It was impractical to follow the Protocol process to estimate NOMAD for individual jurisdictions. However, documentation on jurisdiction characteristics and trends could have informed a tailored NOMAD estimate.
Attribution (the percent of savings that can be attributed directly to Subprogram efforts	• Research of public documents. • Interviews/surveys with code experts. • Interviews with stakeholders.	Calculating attribution using the full attribution methodology is applicable.	The full attribution methodology used in the 2006 – 2008 C&S evaluation is applicable to the reach code jurisdictions. However, performing this methodology was not cost-efficient as a part of the evaluation. The simpler alternative method implemented for this evaluation was relatively easy to conduct, although less rigorous.

Applicability of the IOUs' Methods to Calculate Claimed Savings

Approach Applied

The IOU's methodology for calculating the Subprogram energy savings took into account all the inputs required in the Protocol, except for the potential for double counting. However, instead of using actual building data from the jurisdictions, the consultant applied an indirect approach by using statewide building market estimates from secondary data sources, the 2005 Title 24 impact evaluation, and

knowledge of typical building practices. The consultant then computed the estimated savings for the Subprogram as one statewide value instead of summing values for each jurisdiction and allocated the savings to each IOU using the allocation factors used for Title 24 C&S programs.

Applicability of the Approach to Calculate Subprogram Energy Savings

For the IOUs to calculate the Subprogram's energy saving using the Protocol, they would have to use actual data from the jurisdictions with reach codes. Because the IOUs did not use jurisdiction-specific data, and did not discount for double counting, the approach used does not follow the Protocol and the estimated savings could not be verified at this time. Furthermore, Cadmus also concluded that this approach shifts the evaluator's role from verifying the IOU savings claims to taking on the burden of developing a reasonably accurate savings estimate.

Acceptability of the IOUs' Savings Calculation Approach

In the course of conducting the evaluation, the consultant who calculated the Subprogram energy savings reported that their calculations were meant to reflect only the *potential* magnitude of savings attributable to the Reach Code Subprogram, and not to determine the *actual* energy savings generated. In addition, the April 27, 2011 *IOU 2010 -12 Reach Code Subprogram Savings Estimates* memorandum (calculation methodology memo) stated: "[w]e expect that assumptions used in the estimation could change significantly once better market and technical data are available from IOU program implementation and CPUC evaluation activities."

During the evaluability assessment and this evaluation, Cadmus determined that the majority of the data needed to apply the Protocol directly was not readily available and, therefore, it was not feasible to apply the Protocol as it is written.

Based on these two factors, Cadmus determined that the IOUs' indirect approach, using secondary data, was a reasonable first step in calculating the potential magnitude of savings from the entire Subprogram for this evaluation cycle. However, the IOUs could have relied on more jurisdictions-specific data that would have better reflected the potential magnitude of savings. Table 17 summarizes Cadmus' assessment of whether the inputs used by the consultant in calculating the Subprogram's energy savings reasonably represented the required data given what was available.

Table 17: Assessment of Reasonableness of Inputs Used by the IOUs in Energy Savings Calculations

Component of Calculations	Input Applied in IOU Calculations	Reasonableness
Gross Savings (the total amount of energy that could be saved in the market by a reach code)	• Unit energy savings were modeled assuming 15% savings over 2008 Title 24.	• The 15% savings over 2008 Title 24 assumption is reasonable, as the energy-efficiency requirements of the majority of reach codes is based on CALGreen Tier 1, which is a 15% savings over code. • Cadmus was unable to assess whether the unit energy savings applied were reasonable. The IOU documents indicated that the estimated savings per unit are from a study by Mike Gabel and research performed by the consultant. However, no documents are cited so we could not assess the estimates.
	• Four building types (single-family homes, low-rise multifamily homes, high-rise multifamily homes, and nonresidential buildings) and two climate zones (mild coastal zones and all other zones) were modeled.	• The four building types included adequately covers construction for this purpose.
	• 5% of the construction in California was built under a reach code in 2010, increasing by 5% increments (10% in 2011, 15% in 2012 and 20% in 2013).	• A basis is not cited for the IOUs estimates of the percentages of construction being built under a reach code. • Based on Cadmus evaluation, the IOUs estimate that the percentage of buildings built under a reach code will increase an additional 5% between 2012 and 2013 is high. The Subprogram management team indicated that the number of jurisdictions pursuing reach codes decreased throughout 2012 as the new code cycle approaches.

Component of Calculations	Input Applied in IOU Calculations	Reasonableness
	• 80% of buildings built under a reach code are in compliance with the reach codes.	• The IOUs did not provide the basis for this estimated compliance rate.
	• Floor area of a unit is 2000 square feet in single-family homes and 500 square feet in multifamily homes.	• The square footage estimation does not account for the differences in average home sizes between jurisdictions. • Based on Cadmus' experience, 2,000 square feet is a low estimate for single-family homes.
	• Only new construction is taken into consideration.	• As indicated in the calculation methodology memo, the calculations only include new construction, but several of the adopted reach codes include additions and major retrofits.
	• The forecasts for new construction for single-family homes and nonresidential buildings are based on CEC forecasts for the state of California. • The number of new multifamily homes built in 2010 is based on data from the CIRB database, and the calculations assume a 10% growth rate from 2011 to 2013.	• CEC and Construction Industry Research Board (CIRB) databases are a reasonable basis for statewide construction forecasts. • The rate of new construction has greatly decreased due to the economic downturn.
	• High-rise multifamily buildings were assumed to make up 20% of the total residential new construction.	• The documentation does not provide a basis for the growth rate in multifamily new construction or the basis for assuming that it represents 20% of new construction.
NOMAD (trends in the market and savings that would have occurred without the new code or reach code)	• NOMAD increases linearly from 5% in 2010 to 15% in 2013.	• The IOUs did not provide a basis for the NOMAD estimate they used. However, based on our experience, Cadmus determined this is a reasonable and conservative estimate.

Component of Calculations	Input Applied in IOU Calculations	Reasonableness
▪ Savings claimed by IOUs other programs	• There is no provision in the IOUs saving claims for double counting.	• Based on Cadmus' assessment of the very low potential impact of double counting, it was reasonable for the IOUs to not include double counting in their energy-savings calculations for this cycle.
Attribution	• The IOUs method assumes 84% program attribution based on the savings weighted attribution for 2005 Title 24, without the composite for the remainder.	• This method does not base attribution on any inputs related to the services of the Reach Code Subprogram. However, based on Cadmus simplified approach to estimating attribution, 84% is reasonable.

Assessment of the Potential Level of Attribution

Cadmus assessed the Subprogram's attribution to only one factor of a jurisdiction's process to develop and adopt a CEC-approved reach code—that is, a jurisdiction's efforts to receive CEC approval (see the Method for Assessing the Attribution section for more information on the methodology applied). For this single factor, Cadmus found the Subprogram's activities were extremely important in the jurisdictions' successful adoption of a CEC-approved reach code.

To determine attribution to the Subprogram with regard to this single factor, Cadmus asked the jurisdictions whether they would have been successful in adopting a reach code that would meet the CEC's requirements if the resources and support provided by the Subprogram had not been available. Eight of 10 jurisdictions' interviewees who responded indicated that they would not have successfully adopted a CEC-approved reach code without the climate zone-specific cost-effectiveness studies provided by the Reach Code Subprogram. Based on these responses, and that there was no evidence of other parties providing cost-effectiveness studies, we estimated a potential Subprogram attribution of 80% with respect to this single adoption requirement. These responses are summarized in Table 18. One jurisdiction did not respond to the question, indicating that they considered CEC approval for their reach code unnecessary and that the question was irrelevant.

Table 18: Responses about Whether Jurisdiction Could Have Adopted a Reach Code without the Subprogram

Response About Jurisdictions Pursuing a Reach Code Without Subprogram	Jurisdictions with CEC-Approved Reach Codes (n=10*)	Percentage of Jurisdictions (out of 10 Jurisdictions)
No, could not have adopted a reach code without support from the Subprogram	8	80%
Yes, could have adopted a reach code without support from the Subprogram	2	20%

*A staff member from one jurisdiction said the jurisdiction did not need CEC approval, and, therefore, the question was irrelevant and did not respond.

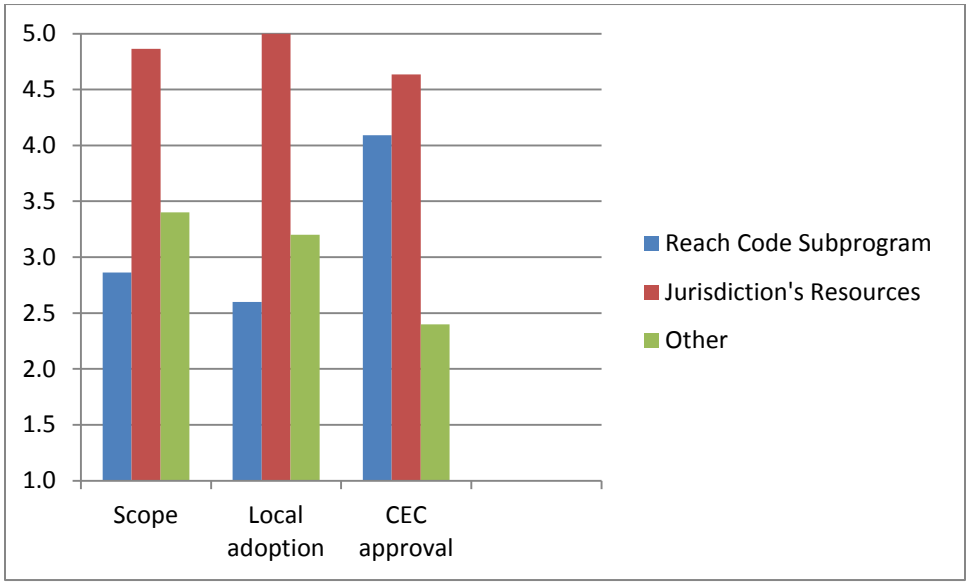
Of the eight interviewees who indicated their jurisdiction could not have adopted a CEC-approved reach code without the Subprogram's support, two said that they did not have the technical ability to develop a cost-effectiveness study, and the other six reported they would not have had the funding to have a cost-effectiveness study developed.

To provide supplemental qualitative information about jurisdictions' perceptions of the relative contribution of the Subprogram, Cadmus also asked the interviewees to compare the importance of the contribution of the Reach Code Subprogram to their jurisdiction's own resources and those from other parties in the development and adoption of their CEC-approved reach code. The respondents used a scale from 1 to 5, where 1 indicated being "not at all important" and 5 indicated being "extremely important" to assess the following:

1. Developing the scope of the reach code, including what building types to include and determining triggers for the inclusion of renovations or additions.
2. Achieving local adoption of the reach code.
3. Receiving CEC approval.

The results are shown in Figure 2.

Figure 2: Importance of Contributions to the Reach Code Process



Not surprisingly, in all three stages the interviewees indicated that their jurisdictions' own staff time and resources were the most important contribution. Other resources were the second most important contribution to the development of the scope of the reach code and to the local adoption process. However, the Reach Code Subprogram received the second highest rating for the third stage of the process, with resources from the Subprogram the most critical to receiving CEC approval after a jurisdiction's own resources. These findings suggest that the jurisdictions could likely have developed a reach code on their own (although a few interviewees indicated that they had referenced the Subprogram's cost-effectiveness studies at this stage), but they relied on the Subprogram's contribution for adopting a code that meets the CEC requirements. This is corroborated by the jurisdiction interviewees who indicated they could not have developed the climate zone-specific cost-effectiveness study on their own.

Estimated Double Counting of Energy Savings

Cadmus found that the IOU programs—Savings by Design, Whole House Prescriptive Program, Whole House Prescriptive Retrofit, California Advanced Homes Program, and Whole House Performance Program—offer rebates to customers with projects that might be built under a reach code. We compared the participant data for these programs to the lists of permits in our sample of jurisdictions with reach codes. Then Cadmus calculated the percentage of projects that received a rebate and were issued a permit under a reach code.

We estimated that savings from 0.18% of the projects permitted under a reach code had been claimed by another IOU program, which is a negligible impact.[8]

$$\frac{\text{Two projects were double counted}}{\text{1,075 projects were permitted under a reach code}} = 0.00184$$

Jurisdiction's Data Tracking

As noted in the Methodology to Estimate Double-Counted Energy Savings section above, Cadmus found that many of the jurisdictions do not track the project data to facilitate calculating the double counting, and many do not have data tracking systems that would allow it. Table 19 summarizes the availability of data from the jurisdictions and whether it included the information necessary to calculate double counting.

Table 19: Availability of Jurisdiction's Data Required to Calculate Double Counting

Data Availability Status	Number of Jurisdictions (n=15)	Notes
Data are available and include the level of detail necessary to compare to IOU databases	6	These jurisdictions track permit data at sufficient detail to identify whether the project is required to meet the jurisdiction's reach code and the project address, which allows data to be matched to rebate applications under other IOU programs.
Could not identify whether projects are required to meet reach code requirements	6	The permit data tracked by these jurisdictions does not include sufficient detail to identify whether the projects are required to meet the jurisdiction's reach code.
Data are not tracked electronically	2	Two jurisdictions do not track permit data electronically.
Data are not available	1	One jurisdiction was not able to provide the level of detail requested.

Possible Revisions to the Codes and Standards Evaluation Protocol

Although the Protocol is technically applicable to the Reach Code Subprogram, it was not cost-efficient to apply given the amount of potential Subprogram savings and effort needed to obtain the required data. If the Subprogram is to be continued as a resource program, the relevant parties need to first understand what data is available or could be cost effectively obtained to calculate Subprogram savings. Then, if necessary, the relevant parties should establish an alternative impact evaluation protocol for estimating the impacts of the Reach Code Subprogram that is based on the data available.

[8] Cadmus did not include upstream programs in the calculation.

Adjustment of Savings Claims

Cadmus could not verify the IOUs' projected savings claims for the Reach Code Subprogram. When we conducted the Subprogram evaluability assessment (see Appendix), we concluded that the IOUs' savings claims could not be verified because we could not confirm the underlying assumptions. Furthermore, we could not adjust the savings because the data necessary to apply the Protocol were not available.

CADMUS

Appendix A: Evaluability Assessment Memo

Date: **Revised May 31, 2012**

To: **CPUC**

From: **Phi Filerman, Anne West, The Cadmus Group, Inc.**

Re: **Reach Codes Subprogram Evaluability Assessment**

The Reach Codes subprogram is a component of the IOUs' Codes and Standards (C&S) Program. A pilot process and impact evaluation of this subprogram is a component of the C&S Program impact evaluation. Cadmus is conducting this pilot evaluation for the CPUC under subcontract to DNV KEMA. This memorandum summarizes the results of Cadmus' evaluability assessment of this subprogram. This evaluability assessment is the first step in the subprogram's evaluation; it determines whether necessary data are available and areas where additional data are needed.

Evaluation Background

The Draft Evaluation Plan for the Statewide Codes and Standards Program (2/17/2012) includes a brief description of the evaluation activities related to the Reach Codes subprogram. Deliverables include this document and a Reach Codes Evaluation Plan that is expected to follow shortly. Earlier drafts included building audits in one or two jurisdictions to check code compliance. However, in light of resource constraints, the plan was revised to focus on stakeholder interviews and secondary research. The results of this research will be used to inform the process evaluation and to examine attribution (the extent to which the IOUs are responsible for the decision by the jurisdictions to adopt reach codes). We will examine a sample of jurisdictions to determine whether savings from reach codes can be attributed to the IOUs and whether methods and protocols to assess impacts are appropriate, and will suggest alternate paths to address any identified gaps.

Evaluation Objectives

The Reach Code subprogram works with jurisdictions in the development and adoption of reach codes. Reach codes are ordinances that exceed the requirements of Title 24, are approved by the CEC, and are legally enforceable. The IOUs claim credit for savings generated for reach codes approved by the CEC.

The process component of the pilot evaluation of the Reach Code subprogram will focus on a sample of participating jurisdictions to document how the subprogram's delivery compares to the description and objectives in the PIP (and other subprogram documentation such as CPUC Decision 09-09-047). It will analyze current subprogram processes; determine if the IOUs are providing the support needed by the

jurisdictions (selected into the sample) to adopt and pursue reach codes; and identify possible improvements to the subprogram.

The pilot impact evaluation will examine a sample of reach code jurisdictions to evaluate the energy savings impact of the subprogram. The evaluation will also review the methods used by the IOUs to determine savings. It will examine how closely the methods follow the general Codes and Standards evaluation protocol. In addition, the evaluation will identify issues with applying the protocol to the subprogram and suggest a path to address how the protocol could be enhanced to be more appropriate to the Reach Code subprogram.

Evaluability Assessment Approach

Cadmus developed an evaluability assessment protocol to determine whether sufficient data were available and what additional data were needed to perform the pilot evaluation. The supporting evaluability assessment table is used as a guideline to document the presence or absence of information critical to a successful process and impact evaluation. (This table can be found in Appendix A.) We populated the assessment table through the review of subprogram materials provided by the CPUC, notes from an interview with Jill Marver of PG&E conducted for the process evaluation of the Extension of Advocacy (EOA) subprogram, and additional program-related materials found through an Internet search. This initial review provided an understanding of the subprogram, its objectives, staffing, activities, stakeholders, and other information needed to inform a program evaluation. We did not conduct any interviews specifically for this assessment (although they are planned for the next phase of this evaluation).

Documents reviewed included, but were not limited to, the following.

1. Program Implementation Plan (PIP)
2. Reach Code logic model provided in the PIP
3. Complete Program Performance Metrics (PPM) Worksheets for 2010–2012 Energy Efficiency Programs prepared by the CPUC
4. CPUC June 10, 2010 New Construction_ CS Reach Code Update provided by the CPUC in response to June 2010 data request
5. April 27, 2011 Memorandum to the Statewide C&S Group, from Heschong Mahone Group IOU 2010-12 Reach Codes subprogram savings estimates
6. Kern County Energy partnership 5-11-11 PowerPoint workshop presentation by Javier Mariscal of SCE
7. Newsletter sent by the Statewide Local Government Energy Efficiency Best Practices Coordinator to local governments and other interested parties, published in the Summer 2010

8. Notes from the EAO Interview with Jill Marver
9. CPUC Decision 09-09-047

Reach Code Subprogram Objectives and Approach

Subprogram Description

The primary purpose of the Reach Code subprogram, as described in the PIP and other supporting documentation, is to support the development and adoption of reach codes that exceed California statewide minimum requirements.

The objectives of the subprogram as summarized in the PIP are to:

- Encourage jurisdictions to optimize compliance with the existing codes prior to adopting a reach code.
- Facilitate the adoption of reach codes by California jurisdictions.
- Document the successes and barriers experienced by the participating jurisdictions in the adoption and implementation of reach codes.
- Utilize the lessons learned by the participating jurisdictions to inform future code development and other state efforts.

The documentation indicates several approaches to achieve these objectives, including:

- Developing a package of standard, CEC-approved, climate-zone based reach codes applicable to the majority of California jurisdictions.
- Developing a set of cost-effectiveness studies for all 16 climate zones in the state. These studies will be available to jurisdictions to meet the cost-effectiveness requirement for CEC approval of proposed reach codes.

In reviewing the materials, we found that the subprogram description and objectives in the PIP are not entirely supported by other subprogram-specific documents. In addition, the subprogram-specific documentation indicates a number of activities not identified in the PIP. For example, the PIP discusses optimizing existing codes, but other supporting materials do not address this objective and do not identify activities that would support reaching this particular objective.

Supporting materials indicate that, to encourage reach code adoption, the subprogram staff will make presentations to working groups and commissions. They will also provide technical expertise at public hearings. The subprogram has developed a variety of resources to support jurisdictions to develop reach codes and submit them to the CEC for approval. These types of activities and resources are not mentioned in the PIP.

Evaluability Assessment Findings

Evaluation Audience

The audience for the evaluation is the CPUC and C&S Program staff. Many of the individuals we plan to interview are also the audience for the evaluation results, and are aware that these evaluations are being conducted. To ensure the evaluation meets the needs of this audience, we will confirm evaluation objectives during the interviews.

Program Theory and Logic

There is an explicit logic model and program theory for the subprogram, and they describe the general activities and outputs that fall under the subprogram. The logic model indicates how the Reach Code subprogram interacts with other IOU programs and other parties in the reach code process (local government agencies, reach code groups, and other stakeholders).

Program Design and Associated Implementation Activities

The subprogram manager works closely with the IOU Local Government Partnership (LGP) program and third-party organizations to identify local jurisdictions that may need technical support to develop and adopt a reach code. In addition, the subprogram staff works with the LGP to identify LGP partner cities or counties that have expressed interest in reach codes. The subprogram staff makes presentations to key stakeholders, facilitate public workshops to obtain community input, and attend public hearings to answer technical questions to support the decision to adopt a reach code. Once a jurisdiction decides to adopt a reach code, the subprogram provides ordinance templates, policy guidelines, cost-effectiveness studies for their climate zone, and other technical support to help the jurisdictions with the CEC application process.

The materials reviewed for this evaluability assessment did not indicate that the subprogram is documenting the successes and barriers experienced by the participating jurisdictions in the adoption and implementation of reach codes.

Although the subprogram is providing cost-effectiveness studies for each of the climate zones within their regions, we have not yet seen these studies to confirm that the subprogram is developing climate-zone based reach codes for new construction and existing buildings.

Program Management

The program manager of the Reach Code subprogram is Javier Mariscal, with SCE. Each of the IOUs has a staff member on the management team. The roles of each member of the management team, and

whether there is other staff involved in the Reach Code subprogram, are not documented in internal management material.

Program Trade Allies

The documentation indicates that the Reach Code subprogram works with trade allies. The subprogram staff works closely with the LGP and other "third-party organizations" to identify potential participants and to coordinate presentations. In addition, the PIP indicates that the subprogram works with a variety of parties to help identify characteristics of reach codes that could be applied to the development of standardized, adoptable reach code ordinances. These parties include the IOU voluntary rebate programs, CEC, Building Standards Commission, the Local Government Commission, IOU green or sustainable communities programs, regional local governments associations, and organizations that promote green-building rating system. At this time, internal documents do not describe which of the listed organizations are involved, or their roles in the process. Documentation confirming that standardized reach codes have been developed has not been provided.

Program Participants

Program participants are jurisdictions participating in the subprogram receiving IOU support for the adoption of reach codes.[9] However, only jurisdictions with CEC-approved reach codes contribute to the Subprogram's claimed energy savings. A list of localities that have adopted reach codes with the assistance of the Codes and Standards Program was provided. It is unclear if the list includes only jurisdictions with CEC-approved reach codes, or whether the list is outdated. Materials provided for review do not indicate if there is any tracking mechanism in place for the subprogram, including participant jurisdictions' contact information.

Program Nonparticipants

The documentation reviewed did not provide a definition of a nonparticipant. Cadmus defined a nonparticipant as a California jurisdiction that (1) does not have a reach code or (2) has a reach code but did not participate in the Reach Codes subprogram. A specific subset of nonparticipant jurisdictions of particular interest is one with a CEC-approved reach code that adopted it without assistance of the subprogram. We do not have an up-to-date list of all jurisdictions with reach codes, or an updated list of

[9] CPUC June 10, 2010 New Construction_ CS Reach Code Update. This is item 4 under the Evaluability Assessment section above.

those that had the option to participate in CE and chose not to.[10] Existing documentation did not indicate whether the IOUs have a tracking mechanism in place to identify nonparticipant jurisdictions and document their contact information. In addition, we do not know if there are other qualifying jurisdictions currently pursuing reach codes that have chosen not to work with the IOUs.

Program Impacts

The IOUs projected savings include specific savings from this subprogram. However, there is no evidence that the statewide savings are based on specific savings from each participating jurisdiction. It is unclear how closely the methods used by the IOUs follow the codes and standards protocol. The existing documentation does not include details needed to determine whether there is duplication (double-counting) of the savings claimed through the Reach Codes subprogram and voluntary incentive programs.[11] As of this writing, the evaluation will plan to focus on attribution since any credit to the IOUs for savings from the Reach Codes program depends on this factor.

Final determination of the method to be used to evaluate energy savings remains to be determined pending review of additional subprogram documentation.

Evaluability Assessment Conclusions

This evaluability assessment identified data, existing and missing, that are necessary to conduct the pilot process and impact evaluation. The subprogram is adequately documented to continue with the pilot evaluation, although additional information required for the evaluation has been identified and will be requested.

Recommendations

We recommend proceeding with the process and impact components of the pilot evaluation of the Reach Codes subprogram. Toward that end, we recommend the following.

1. The subprogram activities and resources should be documented during the evaluation to reflect the subprogram as it has evolved.

[10] Newsletter sent by the Statewide Local Government Energy Efficiency Best Practices Coordinator to local governments and other interested parties, published in the summer 2010. The newsletter is listed as item 7 above, which includes a list of jurisdictions with reach codes, however, we do not know if it is complete, nor whether those listed chose not to participate in the C&S program.

[11] Voluntary programs could include incentives for specific measures or for the whole building as in the Savings By Design (SBD) program. A data request for the SBD participant database will be submitted to the IOUs for both the Title 24 evaluation and the Reach Code evaluation.

2. Differences between the subprogram as delivered and the activities and objectives outlined in the PIP should be identified and documented as a part of the evaluation.
3. The subprogram management, administration, third-party organizations, and trade allies along with their roles and responsibilities should be identified and documented by Cadmus as a part of the process evaluation.
4. To ensure the pilot evaluation meets the needs of this audience, we recommend confirming pilot evaluation objectives during the interviews conducted for the evaluation.
5. The IOUs should ensure that the list of participating jurisdictions is up to date and available for the pilot evaluation.
6. The IOUs should ensure the documentation, including assumptions and algorithms used to calculate savings estimations, are available for the impact evaluation.

Next Steps

1. We will submit a data request to the CPUC and IOUs, including supporting information not included in the existing documentation.
2. We will develop interview guides for identified subprogram staff and trade allies, participating jurisdictions, and consultants involved with the subprogram. Interviews will review the roles of third-party organizations that help identify potential participants, the process by which potential participants are identified, and the successes and barriers of jurisdictions. The interview guides will be submitted to the CPUC for review and approval prior to conducting interviews. Once contact information is provided for key staff, we will develop the interview list and schedule the interviews.
3. We will interview the subprogram manager, the staff involved in the subprogram at the IOUs, other subprogram staff, and consultants. Many individuals we plan to interview are also the audience for the pilot evaluation results, and are aware that the evaluation is being conducted. We will confirm the pilot evaluation objectives with the evaluation's key audience.
4. We will develop a complete picture of the Reach Code subprogram management and administration through interviews conducted for the process component of the pilot evaluation.
5. The trade allies and their roles, activities, and work products will be determined and/or assessed during the process component of the pilot evaluation.
6. The process component of the pilot evaluation will determine whether nonparticipants can be identified. As one possible group of nonparticipants, we will determine whether there are

qualifying jurisdictions with CEC-approved reach codes that chose not to work with the IOUs. If there are, we will interview a sample of this group to understand why they did not work through the subprogram.

7. We will revise the logic model, if needed, after conducting process evaluation interviews.
8. We will update the evaluation plan as needed.
9. We will review the C&S database and conduct the impact evaluation.

Data Request

The next step in the pilot evaluation is a data request for additional information. Data needed include, but are not limited to items in the list below. List of all IOU staff and trade allies involved in the subprogram.

- Contact information for staff and trade allies involved in the subprogram.
- Contact information for the third-party organizations that help to identify and work with potential participant jurisdictions.
- Contact information for the staff within the LGP program and the other third-party organizations who conduct activities within the Reach Code subprogram.
- List of the participating jurisdictions and contact information for key staff at each jurisdiction.
- Contact information for HMG and Gabel Associates staff who calculated the projected savings for the Reach Code subprogram.
- *Reach Codes savings 27Apr2011.xls* referenced in *EEGA 1465 et al_Attachment 1_Reach Codes Savings Estimation April 27 2011.4380*providing assumptions and detailed calculations and methodologies used to estimate savings.
- Representative samples of documents utilized in the marketing, outreach, administration, metric tracking, and implementation for each of the IOUs, if applicable.
- Copies of resources and support materials developed and cost-effectiveness studies.
- Copies of materials documenting the successes and barriers experienced by the participating jurisdictions in the adoption and implementation of reach codes.
- Applicable databases once identified. For example, an applicable database is one that documents and supports the claimed energy savings of the participating jurisdictions.

Appendix B: Jurisdictions with Reach Codes

Table 20 lists the 42 California jurisdictions that adopted CEC-approved reach codes between 2010 and 2012. Of those, 33 jurisdictions submitted cost-effectiveness studies provided by the Reach Code Subprogram management team. For more information on the jurisdictions' reach code submittals see the website http://www.energy.ca.gov/title24/2008standards/ordinances/.

Table 20: Jurisdictions Adopting Reach Codes Between 2010-2012

Jurisdiction	Date of CEC Approval	Received Cost-Effectiveness Study from Subprogram
San Anselmo	December 1, 2010	X
Belmont	July 13, 2011	X
Burlingame	December 29, 2010	X
Chula Vista	March 14, 2012	X
Cotati	July 13, 2011	X
Cupertino	March 20, 2013	
Daly City	December 29, 2010	X
Fremont	June 15, 2011	X
Glendale	August 15, 2012	
Goleta	December 29, 2010	X
Hayward	March 23, 2011	
Healdsburg	September 7, 2011	X
Lancaster	December 11, 2013	
Los Altos	May 5, 2010	
Malibu	August 10, 2011	X
Manhattan Beach	May 4, 2011	
Marin County	May 5, 2010	X
Menlo Park	November 30, 2011	X
Morgan Hill	January 27, 2010	

Mountain View	June 29, 2011	
Napa	May 18, 2011	X
Oakland	September 22, 2010	X
Pacifica	May 18, 2011	X
Petaluma	June 15, 2011	X
Portola Valley	December 29, 2010	X
Redwood City	May 5, 2010	X
San Carlos	December 12, 2012 & December 29, 2010	X
City and County of San Francisco	December 29, 2010	X
San Luis Obispo County	October 10, 2012	
San Mateo	July 13, 2011	X
San Rafael	May 5, 2010	X
Santa Clara	December 15, 2010	X
Santa Monica	February 8, 2012	X
Santa Rosa	July 13, 2011	X
Sebastopol	December 15, 2010	X
Simi Valley	August 25, 2010	X
Sonoma	December 29, 2010	X
Sonoma County	May 4, 2011	X

Tiburon	July 13, 2011	X
Union City	February 10, 2010	X
West Sacramento	September 22, 2010	X
Windsor	September 7, 2011	X