



# Together, Building a Better California

**Pacific Gas and Electric Company (PG&E)**

**Energy Efficiency Business Plan**

**Public Sector Chapter**

**Phase II Draft – April 29, 2016**

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## PG&E's Energy Efficiency Portfolio Vision

PG&E's energy efficiency portfolio is designed to support California's integrated plan for addressing climate change with a goal of reducing greenhouse gas (GHG) emissions to 40% below 1990 levels by 2030<sup>1</sup>. For decades, energy efficiency has played a key role in meeting the state's GHG emissions reduction goals. Recent legislative and gubernatorial action has brought energy efficiency into the forefront, recognizing it as one of the most cost-effective ways to reduce California's carbon emissions.

Since 2007, the enabling policy framework and the "big, bold" energy efficiency strategies presented in the California Long-Term Energy Efficiency Strategic Plan provided a sound roadmap for energy efficiency. Through the Strategic Plan set Zero Net Energy (ZNE) goals for residential, public and non-residential new construction by 2020, 2025 and 2030, respectively, among other goals to guide market transformation.<sup>2</sup> Additionally, the Existing Buildings Energy Efficiency Action Plan, borne out of Assembly Bill (AB) 758, sets forth a clear vision to accelerate the growth of energy efficiency and reduce energy waste.

In 2015, California redoubled its efforts to deliver substantial energy savings and GHG emissions reductions. Through landmark climate legislation, SB 350, the Governor set forth ambitious energy efficiency goals – to double the rate of savings by 2030. These important energy efficiency goals, "create a framework to make energy efficiency a way of life in California."<sup>3</sup>

These ambitious goals call for unprecedented scale and new ways to achieve energy efficiency savings.

**Our Mission:** PG&E's mission is to inspire and empower our customers to eliminate unnecessary energy use within California. Our vision is to reduce per capita carbon production by 2030 through our portfolio of innovative and scalable energy efficiency solutions.

To meet the state's and customer's energy efficiency and carbon reduction goals, PG&E recognizes the need to change the way we encourage our customers to take action and scale energy savings cost-effectively to meet the state goals.

PG&E has devised five key strategies to make significant impact in reducing energy waste and maximizing the value of energy efficiency for our customers.

- Enable energy efficiency as a clean distributed energy resource (DER) to deliver grid benefits
- Reduce all energy waste efficiently, focusing on stranded potential that exists in much of California's building stock
- Focus on directed market transformation and more integration to increase adoption and drive deeper, more persistent energy savings that support customers and the grid.

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<sup>1</sup> <http://www.calepa.ca.gov/Climate/Documents/2015/CAStrategy.pdf>

<sup>2</sup> California Energy Efficiency Strategic Plan, January 2011 update  
[http://www.energy.ca.gov/ab758/documents/CAEnergyEfficiencyStrategicPlan\\_Jan2011.pdf](http://www.energy.ca.gov/ab758/documents/CAEnergyEfficiencyStrategicPlan_Jan2011.pdf)

<sup>3</sup> Ibid

- Supercharge local, regional, and national partners, the right decision-makers, and the ecosystem of energy efficiency stakeholders<sup>4</sup> to continue to make impactful changes in California.
- Simplify our portfolio with a laser-focus on operational excellence

Over the next 5 years, PG&E will shift the way we motivate our customers to save energy. Transitioning away from traditional incentives, PG&E will explore new service and performance models to inspire and empower customers so that we reduce customers' energy bills, and unlock the stranded potential found in much of California's existing building stock, and to more cost-effectively target energy waste in California today.

### Tools to Scale

Achieving state goals, as well as PG&E's portfolio vision, will require a paradigm shift and a new generation of tools to cost-effectively scale. With these tools, PG&E positions its customers for greater energy bill reductions, the state for increased GHG reductions and energy efficiency savings, and the grid with a resource on which it can count. Thanks to enabling legislation such as AB 802, many of these tools are now a reality. Key interventions and strategies include:

- Data-driven targeting and decision-making
- Metered-based savings
- Behavioral, RCx, O&M
- Finance as an enabler
- Purposeful code readiness
- End-to-end project development and technical assistance

### Market Assessment and Gap Analysis Recap

1. The numerous ways for a customer to access PG&E's Energy Efficiency portfolio – from turnkey offerings such as Direct Install, to tailored incentives through our commercial calculated program – reflect PG&E's diverse customer base and their unique needs.
2. Public Sector facilities are diverse and demand a suite of interventions to drive energy efficiency. A small local government administrative building will have a very different usage profile than that of a research and development lab on a University of California campus. There is a need to differentiate program models based on customer size, building type, usage profile and their location on the technology adoption curve.
3. The common thread uniting the varying customer types and segment needs is the model for ownership and decision-making.
4. While other sectors might rely on past research to illuminate market trends and observations specific to those customer types, there is limited data on the Public Sector as a whole. Studies have been conducted on each segment in various forums to inform this report's findings.
5. State policy provides clear goals for reducing energy use for all Public Sector segments but many of the tools to achieving these goals are not yet in place.

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<sup>4</sup> Stakeholders include, but are not limited to: state agencies, specifically California Public Utilities Commission and California Energy Commission (CEC), manufacturers, distributors, contractors, Investor Owned Utilities, Program administrators, energy efficiency program implementers, capital providers and customers.

## Public Sector Profile

While the Public Sector has historically been an area of focus, to date there has not been a consistent definition for Public Sector participants. What follows is a high-level snapshot of the proposed definition of Public Sector participants:

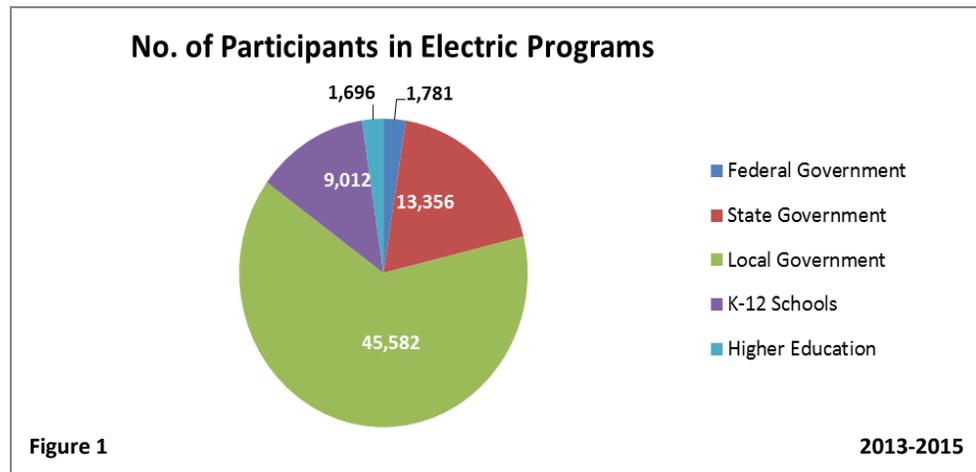
GOVERNMENT SEGMENTS	EDUCATION SEGMENTS
Local and Regional Government (city facilities, county facilities, streetlights, special districts, solid waste and wastewater facilities)	Higher Education (UC/CSU campuses, California Community Colleges, hospitals, research facilities)
State Facilities (buildings, parks, hospitals)	K-12 Schools <sup>5</sup>
Federal (buildings, post offices, hospitals, ports, military, Native American tribal lands)	

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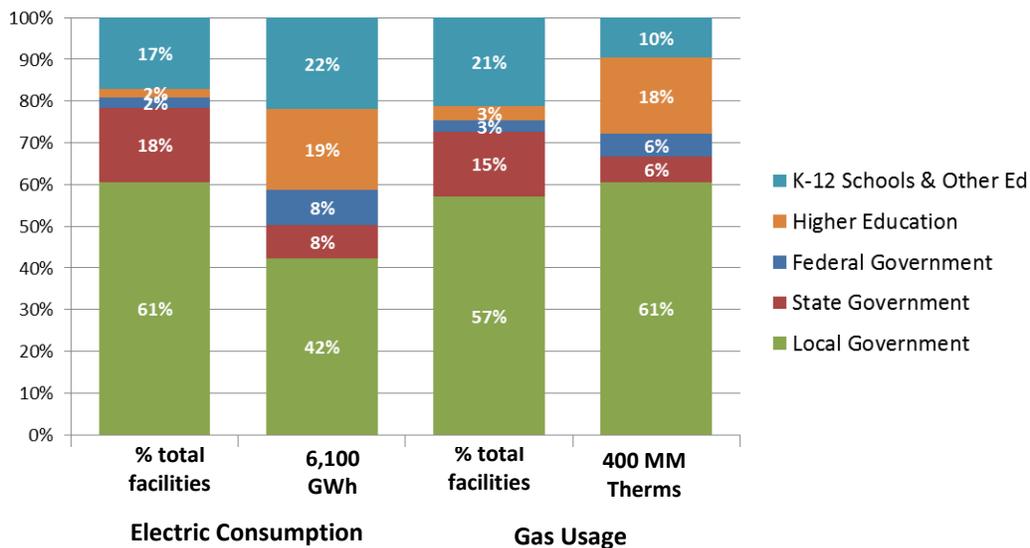
<sup>5</sup> Note: While private schools are not publicly-owned, they have many of the same barriers to entry and usage types as public K-12 schools. In addition, they are often owned by non-profits and serve as a community benefit. As such, we are including them in the public sector to align the way we serve these customers with public schools.

## Public Sector Data<sup>6</sup>

For the purpose of this analysis, PG&E data was organized at both the account level, and the premise ID<sup>7</sup> level, to get close to the facility or building level. With that view, local governments make up the largest segment of the Public Sector with approximately 60% of the number of total facilities. Local governments are followed by State government and K-12 schools, and higher education and Federal buildings make up 2% of the total, respectively (Figure 1).



**Figure 2 - Number of Public Sector Accounts and Usage per Fuel Type, 2015**



As shown in Figure 2, local government is the largest segment in terms of electric and gas consumption in the public sector, dominating the space with over 40% of the electric consumption. The number of accounts does not reflect the percentage of consumption, as seen in the Higher Education segment, which represents just 2% of the total accounts but nearly 20% of the electric consumption.

<sup>6</sup> Ref: Internal PG&E Data Resource

<sup>7</sup> Premise ID is a unique identifier, typically associated with a customer's address. A customer may have multiple premises, especially in the public sector where facilities are spread across jurisdictions of a variety of sizes.

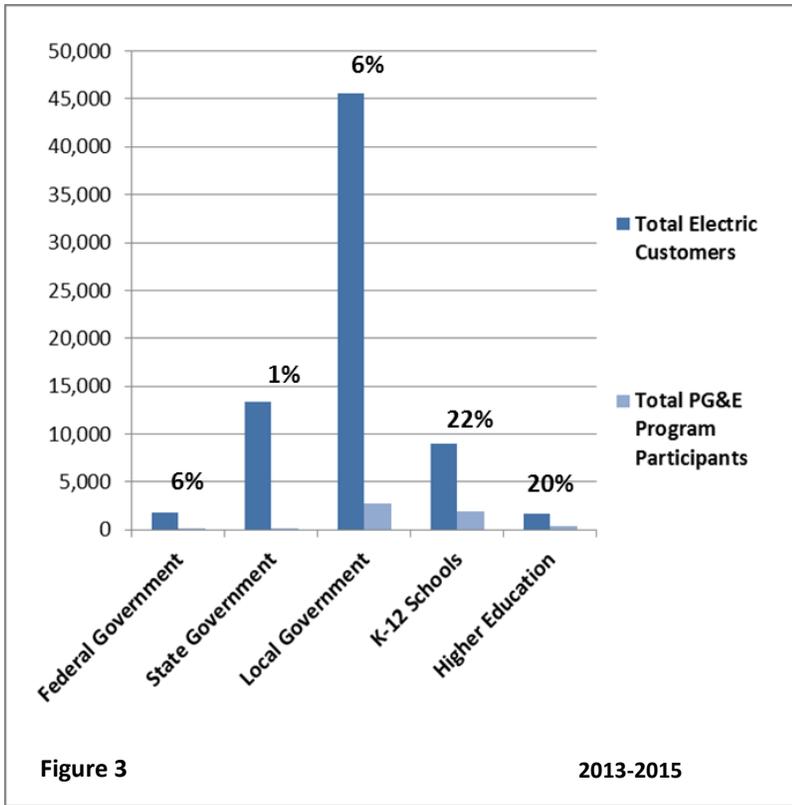
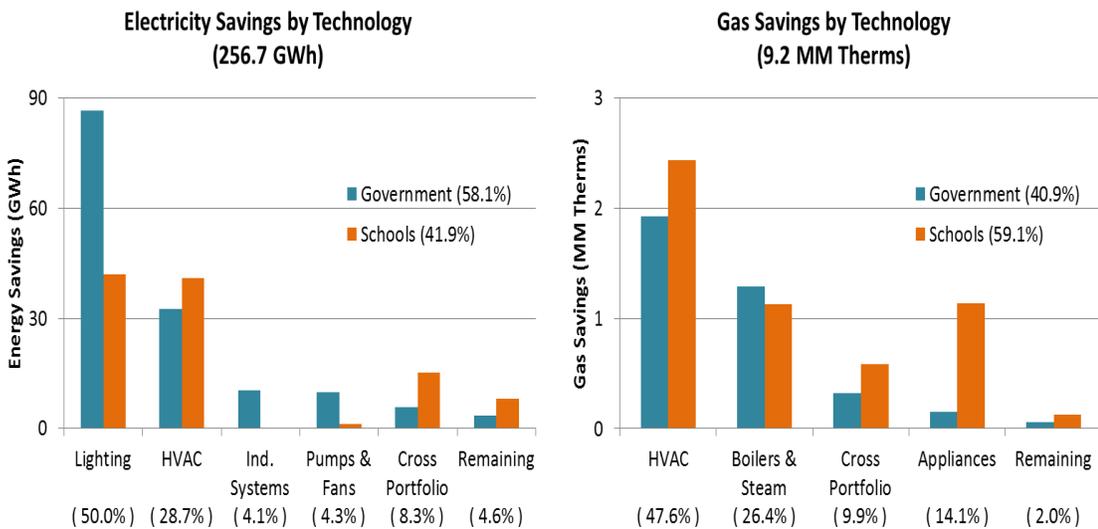


Figure 3 illustrates for each segment the number of electric customer buildings who have participated in PG&E programs, compared to the total number of customers, with the participation rate stacked above customer count. To the left, we see that 20% of education segment facilities have generated energy savings in 2013-2015, demonstrating participation in PG&E energy efficiency programs. In contrast, only 6% of federal and local government buildings have participated in energy efficiency programs, and only 1% of state buildings in PG&E's service territory generated energy savings.

Figure 4 shows historic energy savings by technology in the public sector. While HVAC electric measures are prominent in the overall Public Sector, lighting measures are most popular in Government customers. HVAC and boilers, with a nod to the Education segment for gas use in appliances.

Figure 4 – Public Sector Energy Savings by Segment and Technology, 2013-2015



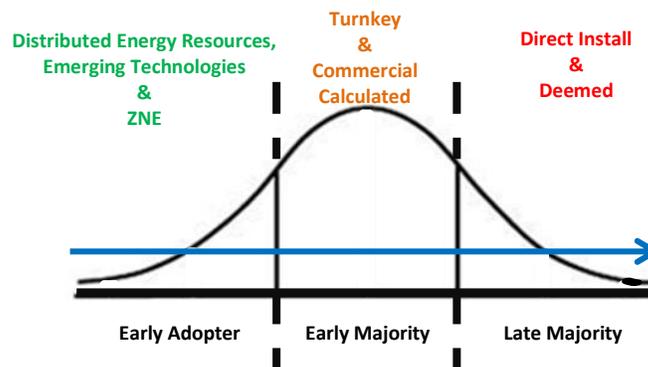
## Public Sector Guiding Principles and the Adoption Curve

The Public Sector approach orients around the guiding principle of “meeting the customer where they are on the energy efficiency journey”. Not only is it important to drive offerings relevant to the segments, but to also acknowledge the diverse needs, abilities and expectations of customers within a segment based on their placement on the technology adoption curve.<sup>8</sup> Public Sector customers, much like commercial and residential customers, experience the incremental adoption of energy efficiency interventions, with a general pattern that mimics the technology adoption curve.

For instance, a 2012 white paper entitled, “*Adopting Local Climate Policies: What Have California Cities Done and Why?*”<sup>9</sup> found that “if a city adopted a less commonly adopted action, such as calculating GHG emissions baseline, it is highly likely that it also implemented the more commonly adopted policies, such as having an individual climate change mitigation program or addressing specific projects’ GHG emissions using [California Environmental Quality Act] CEQA mitigation measures. This indicates a pattern of incremental adoption of policies.” In other words, as we begin to see a directional adoption of climate planning and implementation, it is important to provide solutions for customers at all points – meet them where they are on the customer journey.

Extrapolating these findings to the broader Public Sector, and adapting the technology adoption curve for simplification, this plan acknowledges that customers generally align with one of three groupings: late majority, early majority and early adopters. This plan will consider Public Sector customers along their placement on the adoption curve and to that end, Figure 5 below illustrates where we might expect to see Public Sector customers, and their choices for energy efficiency intervention:

**Figure 5 – Common Energy Efficiency Offerings in the Technology Adoption Curve**



It is likely that Early Adopters access all available solutions, whereas the Late Majority only accesses solutions in priority order established by near, mid and long term timelines.<sup>10</sup> The portfolio is designed

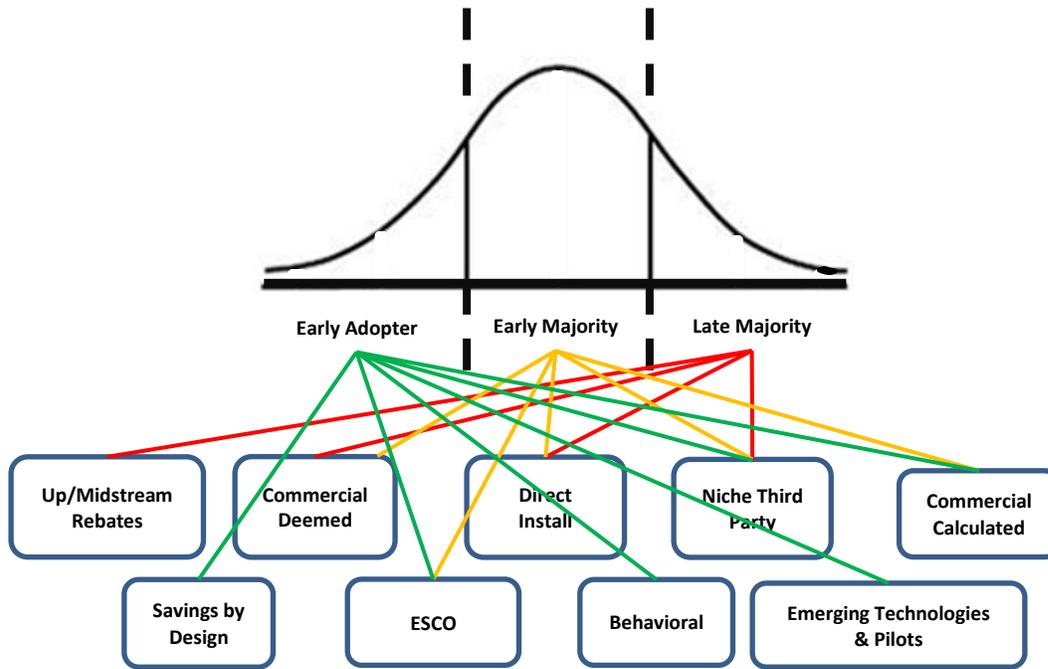
<sup>8</sup> ACEEE. Market Transformation. Retrieved from <http://aceee.org/portal/market-transformation>

<sup>9</sup> Wang, Rui. 2012. Adopting Local Climate Policies: What Have California Cities Done and Why? Urban Affairs Review 49(4) 593–613. Retrieved from <http://uar.sagepub.com/content/early/2012/12/20/1078087412469348>

<sup>10</sup> “...cross-tabulations reveal that the majority of cities adopting the less commonly taken measures also adopted the ones that were adopted more often, but not vice versa, again indicating a pattern of incremental adoption” Wang, 2012.

to be iterative, not strictly linear, and the proposed problem statements for the Public Sector intend to reflect the challenges that the individual segments will encounter along the adoption curve. Generally speaking, Public Sector customers follow the below progression on their energy efficiency journey through the PG&E portfolio.

**Figure 6 - Energy Efficiency Programs in the Technology Adoption Curve**



**Entry Points for the Public Sector to the PG&E EE Portfolio**

What becomes clear is the level of complexity, and the potential for customer confusion, that the current structure represents. PG&E envisions a shift in its offerings and intervention strategies, consistent with AB802 and the evolution of the Pay for Performance model, towards a more streamlined suite that drives towards a single metric of performance. This shift will likely take the portfolio away from a widget-based model to one focused on net reductions in energy use, capturing both building and behavioral efficiencies.

## Public Sector Problem Statements

Public sector customers experience unique barriers to adopting energy efficiency.

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### Problem Statement #1, Competition for Limited Resources

Problem Statement	High-level Solution
<p>Energy efficiency opportunities must be competitive propositions in an environment of limited resources (limited in-house capacity).</p> <p>Public customers struggle with a greater number of competing priorities than the average non-residential customer because of their obligation to address economic, public health, and other societal issues in addition to operating a business.</p>	<p>Continue to offer a broad suite of energy efficiency opportunities to bridge customers' most urgent gaps. While customers starting on their energy efficiency journey will need a turnkey solution to plan and sell projects, customers that have addressed the low-hanging fruit will lean on a strong customer relationship manager within PG&amp;E for innovative solutions that may push beyond energy efficiency alone.</p>

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### Problem Statement #2, Project Enablement

Problem Statement	High-level Solution
<p>The current framework for enabling energy efficiency projects presents a number of barriers to enabling energy efficiency projects, above-and-beyond that of limited resources.</p> <p>Public Sector customers face 1.) limited access to low-cost financing, 2.) complex energy efficiency portfolio offerings, and 3.) pervasive project procurement challenges.</p>	<ol style="list-style-type: none"><li>1.) The utilities have an opportunity to develop and expand existing programs to address unmet financing needs, such as large projects over \$1 million and small projects with a less-than \$5,000 copay, and offering a supporting framework, such as the Investor Confidence Project. Future offerings for financing might be leveraged for projects wherein energy savings and technical assistance are eligible activities.</li><li>2.) PG&amp;E's portfolio will continue to evolve with the advent of AB 802 towards a more cost-effective model of targeted options that reduce unnecessary complexity and drive towards a streamlined model. With this transition is the opportunity to re-examine that which makes the Public Sector unique in terms of ex-ante baseline assumptions and Industry-Standard Practice, among other valuations.</li><li>3.) Lastly, the Public Sector is bound by complicated and arduous procurement challenges, often resulting in lengthy bidding and multiple approvals by elected boards and councils. PG&amp;E can pursue options to ease this process, such as Job Order Contracting, and aligning program cycles and product releases/sunsets with the procurement timelines in-mind.</li></ol>

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### Problem Statement #3, Transforming the Market

Problem Statement	High-level Solution
<p>Limits on the allowable uses of energy efficiency funding in the public sector disincentives longer-term integrated planning efforts that drive down greenhouse gas emissions and challenge the broader goals of doubling energy efficiency in CA.</p> <p>The current utility structure presents barriers for integrated planning: As outlined in the 2015 Integrated Energy Policy Report, a “more siloed approach to energy planning in which renewable energy goals are considered separately from energy efficiency or demand response or storage goals, for example, does not generate the best results. Each area progresses towards the respective goals but is not integrated and not necessarily part of an effective strategy to meet climate goals. A more integrated approach aimed at GHG reductions is needed.”<sup>11</sup></p>	<p>Public Sector customers are orienting around a single metric for performance – Greenhouse Gas (GHG) Emissions reductions – in their long-term planning. If the utilities were supported in leveraging resources to match this transition to GHG emission reductions, the portfolio might also shift to better support integrated long-term planning beyond simply mitigation, but also including <i>adaptation</i> and <i>resiliency</i>, supporting the Public Sector in their biggest challenges in data and planning support.</p> <p>With the evolution away from a largely widget-based offering to that of pay-for-performance, and enhancing the integrated offering across intervention types (DR, DG, EV, EE), there is no better time to orient the portfolio around the customer’s needs.</p>

The following sections will examine the relevance of the problem statements for each segment. Throughout the proposed solutions, a [E] will signal an existing offering and a [N] will indicate a new offering or idea. When reviewing PG&E customer and building data, it is important to note that in the Public Sector, all gas customers are also electric customers – in other words, gas customers are a subset of electric customers. Additionally, this report references customer size throughout; please refer to the following chart for reference:

Customer Size	kW	kWh	Therms
<b>Large</b>	> 200	> 500,000	> 250,000
<b>Medium</b>	20-200	400,000-500,000	10,000-250,000
<b>Small</b>	< 20	< 40,000	< 10,000

<sup>11</sup> California Energy Commission. 2015. 2015 Integrated Energy Policy Report. Publication Number: CEC-100-2015-001-CMF. Retrieved from [http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-01/TN210279\\_20160211T152803\\_2015\\_Integrated\\_Energy\\_Policy\\_Report\\_Small\\_Size\\_File.pdf](http://docketpublic.energy.ca.gov/PublicDocuments/15-IEPR-01/TN210279_20160211T152803_2015_Integrated_Energy_Policy_Report_Small_Size_File.pdf)

## GOVERNMENT SEGMENTS

### LOCAL and REGIONAL GOVERNMENTS

Local and regional governments in PG&E’s service territory, including cities, counties, special districts, and regional joint powers authorities, make up a network of customers of varying levels of engagement with PG&E’s program offerings. While some are directly engaged as local partners with PG&E Local Government Partnerships or are a beneficiary of such partnerships, others have had limited energy efficiency engagement or are as-of-yet unengaged. The varied levels of engagement reflect a breadth of needs and levels of readiness for energy efficiency adoption and climate planning and implementation.

**Figure 7 – Average Number Local Government Customers, 2013-2015**

Local Government	Total Electric Buildings	Total Gas Buildings	% Gas
Large	41,425	5,285	13%
Medium	2,506	725	29%
Small	1,650	368	22%
<b>Total</b>	<b>45,582</b>	<b>6,377</b>	<b>14%</b>

Ref: Internal PG&E Data Source

The data demonstrates that the vast majority (90%) of local government buildings are large in size.

**Figure 8 – Percent Unique and Repeat Customers and Electric and Gas Savings, 2013-2015**

Local Government	Total Electric Participating Buildings	% Unique, Electric	% Repeat, Electric	Total Gas Participating Buildings	% Unique, Gas	% Repeat, Gas	GWh	MW	MM Therms
Large	2,812	5%	1%	1,054	15%	2%	113	9	1
Medium	140	5%	1%	120	13%	1%	1	0	0
Small	48	2%	0%	39	10%	1%	1	0	0
<b>Total</b>	<b>3,000</b>	<b>5%</b>	<b>1%</b>	<b>1,213</b>	<b>14%</b>	<b>2%</b>	<b>115</b>	<b>10</b>	<b>1</b>

Ref: Internal PG&E Data Source

While large buildings dominate the local government landscape, there is not a significant difference in the percent of buildings with energy savings (i.e. past participants) and the number of repeat customers is quite low. Local government customers can access the deemed and custom catalog, but are also participants of the Regional Direct Install model which is offered solely through Local Government Partnerships.

From its origins in 2004 PG&E’s Local Government Partnerships (LGPs) have grown to number twenty-two, covering nearly every county in PG&E’s service territory. These partnerships are designed to accomplish three broad goals:

1. Work with local governments to generate energy and demand savings within their own facilities and in their communities;
2. Take actions to support the California Energy Efficiency Strategic Plan (CEESP, or “Strategic Plan”) objectives, and;
3. Provide demand-side management (DSM) outreach in the community

In addition to local government, LGPs serve a variety of customer types including small and medium business (SMB), non-profit, residential and special districts – many act as a conduit for PG&E’s large portfolio of offerings and advocate for the customers’ unique needs. While some LGPs focus on community outreach as their primary activity, others count project development and execution as their core competency. All LGPs benefit from the Regional Direct Install program, a turnkey offering tailored to the public and SMB customer.

### PG&E LGPs as a Trusted Advisor

In a 2008 study, The Public Policy Institute of California (PPIC) recognized that while California local governments are engaged in climate change issues, there are key barriers which prevent them from implementing specific programs to reduce GHG emissions. The barriers they listed include quality of information, local government resource constraints, and clarity in state law. As a solution, the PPIC encourages collaborative partnerships with surrounding regional entities to help overcome these barriers<sup>12</sup>. PG&E’s Local Government Partnerships are a prime example of such collaboration. An E Source government sector survey<sup>13</sup> found that government organizations prioritize the need for a trustworthy advisor to make energy efficiency decisions; the short list of priorities also include payback and cost, available rebates, minimum hassle and financing. PG&E, as the trusted advisor, is particularly well-positioned to empower local governments to eliminate unnecessary energy use while meeting the needs of their local communities.

Local Government Snapshot 49 Counties, 242 Cities, over 50,000 Customer Premises		
Early Adopter	Early Majority	Late Majority
Early Adopters typically leverage non-resource long-term energy and climate planning resources to drive energy and GHG savings in their communities. These customers typically have broad support for integrated planning and likely benefit from a dedicated sustainability and/or energy manager.	Early Majority LG’s often rely on PG&E non-resource offerings such as the CEESP and the Statewide Energy Efficiency Collaborative (SEEC) <sup>14</sup> to kick-off long-term energy and climate planning initiatives in their facilities, and to a lesser extent, in their communities as well. These customers often have a climate action plan or energy built into their general plans. They also often have an onsite energy and/or sustainability manager.	Late Majority LG’s may not have an onsite energy or sustainability manager and therefore will rarely take advantage of PG&E non-resource offerings to encourage GHG reduction from the energy sector, except for limited, stand-alone efforts such as facility benchmarking or education. Oftentimes, they do not have a climate action plan or energy built into their general plans.
<b>Entry-point to PG&amp;E Portfolio:</b> participation	<b>Entry-point to PG&amp;E Portfolio:</b> participation as a result of word-of-	<b>Entry-point to PG&amp;E Portfolio:</b> passive participation as a result of

<sup>12</sup> Hanak, E., L. Bedsworth, S. Swanbeck, and J. Malaczynski. 2008. *Climate policy at the local level: A survey of California’s cities and counties*. San Francisco: Public Policy Institute of California. Retrieved from <http://www.ppic.org/main/publication.asp?i=849>

<sup>13</sup> Cooper, Rachel. 2013. E Source Market Research: Government and Public Administration Sector Profile and Survey.

<sup>14</sup> “A city with more resources allocated toward planning or sustainability-related staff is likely to have higher administrative capacity to design and implement climate policies.” Wang, Rui. 2010. *Leaders, Followers and Laggards: Adoption of the U.S. Conference of Mayors Climate Protection Agreement in California*. University of California Transportation Center. UCTC-FR-2010-22. Retrieved from <http://uar.sagepub.com/content/early/2012/12/20/1078087412469348>

through direct outreach and known interest in Savings by Design, behavioral offerings, and emerging technologies.	mouth and direct outreach from LGPs, engaging in deemed and custom projects, ESCO's, and specialized third party programs.	direct outreach through Regional Direct Install and LGPs, typically utilize deemed core catalogue rebates, deemed direct install offerings, and turnkey offerings.
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**Problem Statement #1, Competition for Limited Resources**

A majority of California’s local governments (LGs) consider themselves too resource constrained (lacking staff or funding) to develop and implement climate-related policies and programs.

Solutions: Problem Statement #1 Competition for Limited Resources		Solutions, detailed
<b>Foster Capacity Building</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Leverage non-resource funding to provide the staffing resources, either in-house or via a program like CivicSpark, to complete a work product with a long shelf life like a climate action plan or energy efficiency strategy</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[E] Expand the participation in existing trainings on code compliance to rural LGs by traveling widely in the service territory</li> <li>[N] Expand the availability of Building Operator Certification Trainings</li> </ul>
	LONG TERM	<ul style="list-style-type: none"> <li>[N] Expand trainings on code compliance to rural LGs by traveling widely in the service territory</li> <li>[N] Explore the concept of the shared employee, or a regional resource, for under-resourced municipalities with a model that is self-sustaining</li> <li>[N] Explore an internship offering via LGPs</li> </ul>
<b>Establish Demand Reduction as Long-Term Goal</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Continue to engage LGs in Emerging Technology opportunities and pilots for reducing load, such as the Targeted Demand-Side Management (TDSM) Pilot</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Demonstrate, in an engaging and visual way, the equivalent GHG emission reductions of proposed projects to align with state policy goals in a variety of forums (reports, website, project proposals)</li> </ul>
	LONG TERM	<ul style="list-style-type: none"> <li>[N] Translate program offerings and accomplishments to local values (e.g. economic vitality<sup>15</sup>, reduced traffic congestion) to increase relevancy for local communities<sup>16</sup></li> </ul>

<sup>15</sup> “Governments see sustainability policies as giving them an edge for economic development and others may even see sustainability as a way of saving money.” p. 6. Sharp, E. B., D. M. Daley, and M. S. Lynch. 2011. Understanding local adoption and implementation of climate change mitigation policy. Urban Affairs Review 47 (3): 433-57. Retrieved from <http://uar.sagepub.com/content/early/2010/12/24/1078087410392348>

<sup>16</sup> “Local co-benefits exist mainly because GHGs are often emitted by activities that produce other non-market costs to the society.” Wang, 2010.

<b>Help LG’s pursue external funding/ support for innovation</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Leverage the Statewide Best Practices Coordinator to disseminate best practices to all LG’s</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[E] Expand peer network opportunities to share resources and experiences</li> </ul>

### Problem Statement #2, Project Enablement

Local governments and constituents who adopt climate action policies and programs often underestimate the associated costs of such programs and implementation while lacking the policy background, data, and tools needed to implement projects.<sup>17</sup> After the pen dries on an Energy Plan as a part of a city’s General Plan, or a Climate Action Plan, “local governments often lack the resources and the data access to identify the energy savings potential of the commercial buildings and homes in their jurisdictions. Local governments need this information, for example, to assess efficiency potential as part of their climate action plans.”<sup>18</sup> PG&E can support the implementation of projects by addressing financing as a barrier, re-shaping the existing portfolio, tackling procurement challenges and providing leadership for cross-jurisdictional collaboration.

Solutions: Problem Statement #2 Project Enablement		Solutions, detailed
<b>Financing Support<sup>19</sup></b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] LGPs leverage existing PG&amp;E portfolio for rebates and incentives to retrofit their own facilities, from turnkey Direct Install offerings to more complex custom projects</li> <li>[E] Increase the OBF program’s participation</li> <li>[N] Expand the Investor-Confidence Project to support consistency in reviewing proposals</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Re-examine current loan parameters to allow for larger and more complex projects through OBF</li> <li>[N] Develop a micro-loan offering for projects with a copay of less-than \$5,000</li> <li>[N] Expand the use of revolving loan pools</li> <li>[N] Explore new financial offerings, such as a “Green Bond” program<sup>20</sup></li> </ul>
	LONG TERM	<ul style="list-style-type: none"> <li>[N] Explore a bulk purchasing offering to leverage PG&amp;E’s buying power on behalf of LGs</li> <li>[N] Explore options for demonstrating the value of investing in high-performance buildings</li> </ul>

<sup>17</sup> Engel, K. H., and B. Y. Orbach. 2008. Micro-motives for state and local climate change initiatives. Harvard Law & Policy Review 2:119-37.

<sup>18</sup> Integrated Energy Policy Report, page 22

<sup>19</sup> Ibid.

<sup>20</sup> KPMG International. 2015. Sustainable Insight: Gearing up for green bonds.

<b>Increase Relevancy of PG&amp;E Portfolio</b> <sup>21</sup>	NEAR TERM	<ul style="list-style-type: none"> <li>• [E] Leverage “quick-wins” for the under-engaged LGs, such as participation in the Regional Direct Install program</li> <li>• [E] Continue to deploy ESCO services for appropriate LG facilities, specifically offering guidance and technical assistance</li> <li>• [E] Continue to revisit incentive levels for optimized program participation</li> <li>• [N] Re-examine basic assumptions that drive claimable savings, such as EUL, Industry-Standard Practice for LG facilities, and baseline assumptions for Early Retirement scenarios. Related, revisit DEER hours per the specific uses of LG facilities.</li> <li>• [N] Targeted programs for water agencies for reductions in embedded energy</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>• [N] Integrate behavioral programs into the existing offerings for holistic support</li> </ul>
	LONG TERM	<ul style="list-style-type: none"> <li>• [N] Expand the technical assistance offering for project enablement, scoping, proposals and sales</li> <li>• [N] Design new offerings that leverage Smart Meter data, supported by AB 802, which may include a whole building approach, maintenance and commissioning measures</li> </ul>
<b>Overcome Procurement Challenges</b>	NEAR TERM	<ul style="list-style-type: none"> <li>• [E] Continue to pursue flexibility where possible to reduce re-work and re-bids that might lead to a lengthy procurement process</li> <li>• [N] Develop a Job-Order Contracting offering to support LGs in expediting procurement</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>• [N] Recognizing that LG customers have a longer lead time for projects due to increased permitting and public bidding requirements, work to align incentive changes and the public fiscal year so that customers do not experience budget shifts mid-project.</li> </ul>
	LONG TERM	<ul style="list-style-type: none"> <li>• [N] Explore alternate pathways to align program and project timelines that match LG bidding and procurement needs</li> </ul>

<sup>21</sup> EM&V study: “The IOUs should find ways to connect local governments to additional technical resources within the IOUs. The largest barriers to Strategic Plan Project completion are 1) a lack of subject-matter expertise, and 2) technical support for projects. While the IOUs generally provide this service directly to LGs, there remains an unmet need for greater access to technical staff and resources.” Opinion Dynamics. Prepared for the California Public Utilities Commission, Energy Division. January 26, 2016. p. 4 PY 2013-2014 LGPs Value and Effectiveness Study and Report. Retrieved from [http://www.calmac.org/publications/2013-2014\\_Local\\_Government\\_Partnerships\\_Study\\_Report\\_Final\\_2016\\_1\\_29.pdf](http://www.calmac.org/publications/2013-2014_Local_Government_Partnerships_Study_Report_Final_2016_1_29.pdf)

### Problem Statement #3, Transforming the Market

The current model of energy efficiency funding for LGs leaves a support gap in respect to their long-term, integrated energy and climate planning efforts. However, the allowable use of energy efficiency funds is too narrowly defined to allow for more comprehensive, integrated, long-range planning through IOU/LG partnerships. “One of the major challenges for many local governments is the lack of consistent funding sources for sustainability activities.”<sup>22</sup>

Solutions: Problem Statement #3 Transforming the Market		Solutions, detailed
<b>Long-term Integrated Climate Planning</b> <sup>23</sup>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Continue to support for LGs in their alignment with the CEESP goals</li> </ul>
	MID/ LONG TERM	<ul style="list-style-type: none"> <li>[N] Expand the allowable uses of energy efficiency funding to support adaptation and resiliency planning, as appropriate<sup>24</sup></li> </ul>
<b>Support LG education, assessment of climate impacts through Adaptation Planning</b>	MID TERM	<ul style="list-style-type: none"> <li>[N] Provide technical support, data services, and statewide support for LGs (e.g. SEEC, Civic Spark) to encourage LGs to assess the impacts of climate change, including first and foremost how energy demand and usage can be impacted.</li> </ul>
<b>Data as a service. Tailored meter-based savings, beyond claimable savings.</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Share existing tableau reports with LGs in a proactive manner</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Re-design PG&amp;E's data reports to provide a progress report on planning and implementation efforts, which can lead to scaling successful efforts, prioritizing efforts based on efficacy, identifying deeper savings opportunities</li> </ul>
	LONG TERM	<ul style="list-style-type: none"> <li>[N] Leverage Smart Meter data for behind-the-meter savings: “The smart meter infrastructure in much of California provides a transformative opportunity to measure and monitor electricity usage at a much finer level of detail than what was historically possible.”<sup>25</sup></li> </ul>
<b>Support ZNE, DER, Micro-grid alignment</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[N] Develop a “road-map” for LGs to follow that may begin with a turnkey offering and lead to a comprehensive customized</li> </ul>

<sup>22</sup>Integrated Energy Policy Report, p. 21

<sup>23</sup> EM&V: “Funding for the projects provides the means (i.e., people, knowledge, and tools) to the LGs to develop policies that align with and support CEESP goals.” Opinion Dynamics. Prepared for the California Public Utilities Commission, Energy Division. January 26, 2016. p. 2 PY 2013-2014 LGPs Value and Effectiveness Study and Report. Retrieved from [http://www.calmac.org/publications/2013-2014 Local Government Partnerships Study Report Final 2016 1 29.pdf](http://www.calmac.org/publications/2013-2014%20Local%20Government%20Partnerships%20Study%20Report%20Final%202016%201%2029.pdf)

<sup>24</sup> “Adaptation policies are adopted by a smaller number of California cities, with a significant difference in cities’ motivations to adapt versus to mitigate.” Wang, 2012.

<sup>25</sup> Integrated Energy Policy Report, p. 22

	solution that integrates various Distributed Energy Resources (DER)
MID TERM	<ul style="list-style-type: none"> <li>[N] Enhance LGP Program Manager technical resources for supporting integrated efforts for LGs pursuing DER</li> </ul>
LONG TERM	<ul style="list-style-type: none"> <li>[N] Enable LGs to prioritize projects with the greatest potential for GHG emission reductions by providing strategic direction on all variables</li> <li>[N] Guide project scope aligned with demand response offerings for peak load management</li> </ul>

## STATE OF CALIFORNIA

The State of California (SOC) accounts use approximately 160 megawatts annually representing approximately 8% of PG&E’s Public Sector load. PG&E and other Investor-Owned Utilities (IOUs) have partnered with the California Department of Corrections and Rehabilitation (CDCR), the Department of General Services (DGS), and other State departments and agencies to support adoption of energy efficiency measures. CDCR is the largest energy user under the jurisdiction of the Governor (58% of the SOC account). DGS oversees about \$9 billion in procurements each year for the State, managing 2,920 properties totaling almost 7 million acres owned by the State and controlled by over 40 state agencies. These include everything from multi-story office buildings, warehouses and armories to small pump stations and field offices. The State also holds 2,376 leases covering 16.6 million square feet of office space and over 5.4 million square feet of storage and other space, and DGS manages most of these. Executive Order B-18-12, Statewide Energy Retrofit Program, mandates state agencies to implement energy efficiency, demand response, greenhouse gas reduction and sustainability efforts. DGS is responsible for implementing this policy.

**Figure 9– Average Number of State of California Customers, 2013-2015**

State Government	Total Electric Buildings	Total Gas Buildings	% Gas
<b>Large</b>	12,613	752	6%
<b>Medium</b>	456	88	19%
<b>Small</b>	287	46	16%
<b>Total</b>	<b>13,356</b>	<b>886</b>	<b>7%</b>

Ref: PG&E Internal Data Source

As seen in Figure 9, large buildings for the State of California account for nearly 95% of the building stock. The low participation rates for State buildings demonstrate the vast potential and deep barriers present in pursuing energy efficiency (Figure 10).

**Figure 10 – Percent Unique and Repeat Customers and Electric and Gas Savings, 2013-2015**

State Government	Total Electric Participating Buildings	% Unique, Electric	% Repeat, Electric	Total Gas Participating Buildings	% Unique, Gas	% Repeat, Gas	GWh	MW	MM Therms
<b>Large</b>	159	1%	0%	86	8%	1%	15	2	0
<b>Medium</b>	7	2%	0%	7	6%	0%	0	0	0
<b>Small</b>	4	1%	0%	2	4%	0%	1	1	0
<b>Total</b>	<b>170</b>	<b>1%</b>	<b>0%</b>	<b>95</b>	<b>7%</b>	<b>1%</b>	<b>16</b>	<b>4</b>	<b>1</b>

Ref: PG&E Internal Data Source

In this segment, customers generally fall into the majority and late majority and typically access lighting controls, air handling units, OBF, boilers, steam optimization and renewables.

### Problem Statement #1, Competition for Limited Resources

State of California customers commonly experience the following issues related to constrained resources:

- Lack of dedicated program/project management to implement EE projects
- Lack of customer expertise and EE project prioritization is low

Solutions: Problem Statement #1 Competition for Limited Resources		Solutions, detailed
<b>Program/Project Management Support</b>	MID TERM	<ul style="list-style-type: none"> <li>[N] Dedicated project manager funded by IOU's or other sources</li> </ul>

### Problem Statement #2, Project Enablement

State of California customers commonly experience the following issues related to project enablement:

- Lengthy project review and approval cycles make it challenging for some agencies to maintain schedules; complexity of state agency contracting and procurement procedures
- Some agencies' decentralized sites are not accountable to headquarters. There is no requirement to provide headquarters with documentation demonstrating energy efficiency projects were scheduled and/or completed.
- Some agencies can only implement energy efficiency programs with support from the Statewide Partnership/IOU incentives
- Some agencies are hampered by the \$1M OBF ceiling
- Some agencies experience that the State's budget does not sufficiently prioritize energy efficiency project funding; emergency and regulatory compliance work gets higher priority
- Inability to obtain sufficient financing to fund large infrastructure projects.
- Complexity of energy efficiency implementation stalls projects

Solutions: Problem Statement #2 Project Enablement		Solutions, detailed
<b>Financial Resources</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Leverage existing financing options available to State (Revolving loan fund program; GS SMART; OBF; and Cap and Trade funding)</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[E] Leverage newer financing options (iBank CLEAN program – CA Lending for Energy and Environmental Needs).</li> <li>[N] Increase OBF cap from \$1M to an amount that enables project completion</li> </ul>
<b>Optimize PG&amp;E energy efficiency portfolio</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Ensure PG&amp;E programs (and subsequent RFPs) align with State's contracting codes (e.g., DI, OBF)</li> <li>[E] PG&amp;E continues to competitively bid Direct Install programs in a manner that meets state contracting law</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Implement turnkey or Direct Install program customized for the needs of state agencies (meet state requirements for contracts, \$0 out of pocket costs)</li> <li>[N] Explore a dedicated Project Manager and Sustainability Lead funded by IOU's and/or other sources</li> <li>[N] Provide enhanced project management services to select agencies. Some agencies would potentially be willing to receive these</li> </ul>

		services in lieu of an incentive or rebate.
<b>Understanding state agency contract and procurement procedures</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Within IOU's, create deeper understanding of state agency contract and procurement procedures</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Permit the State's executive office to leverage "job order contracting" to streamline procurement process and implementation timelines</li> </ul>

### Problem Statement #3, Transforming the Market

State of California customers are challenged by Title 24 as baseline, given the delta between the current state of the building stock and code.

Solutions: Problem Statement #3 Transforming the Market		Solutions, detailed
<b>Existing Conditions Baseline Program</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[N] State agencies would more readily utilize a program that offers the base case as "existing conditions" versus just Title 24. Leverage AB 802 for this customer segment</li> </ul>
<b>Data Access</b>	MID TERM	<ul style="list-style-type: none"> <li>[N] Improve upon existing data platforms (My Energy) to provide State more actionable customer data (e.g. per meter)</li> </ul>

## FEDERAL GOVERNMENT

Federal accounts use approximately 160 megawatts annually representing approximately 8% of PG&E's Public Sector load. There are several hundred federal agencies in PG&E's territory, many of whom have not participated in EE programs in the past. Federal customers in PG&E's service territory typically use the Utility Energy Services Contract (UESC) model to implement large, complex projects. This turnkey model is offered through PG&E's New Revenue Development organization. Future EE Portfolio offerings will likely focus on serving smaller, underserved Federal facilities that are not being served through the UESC model.

**Figure 11– Average Number of Federal Customers, 2013-2015**

Federal Buildings	Total Electric Buildings	Total Gas Buildings	% Gas
Large	1,352	499	37%
Medium	279	121	43%
Small	150	37	25%
<b>Total</b>	<b>1,781</b>	<b>657</b>	<b>37%</b>

Ref: PG&E Internal Data Source

As seen in Figure 11, large buildings account for over 75% of all Federal buildings in PG&E's service territory. Program participation has remained low (Figure 12) due to a number of barriers, as outlined below.

**Figure 12 – Percent Unique and Repeat Customers and Electric and Gas Savings, 2013-2015**

Federal Buildings	Total Electric Participating Buildings	% Unique, Electric	% Repeat, Electric	Total Gas Participating Buildings	% Unique, Gas	% Repeat, Gas	GWh	MW	MM Therms
Large	84	4%	0.8%	64	10%	0.6%	15	2	2
Medium	26	9%	0.0%	26	22%	0.0%	0	0	0
Small	4	3%	0.0%	3	8%	0.0%	0	0	0
<b>Total</b>	<b>114</b>	<b>5%</b>	<b>0.6%</b>	<b>93</b>	<b>12%</b>	<b>0.5%</b>	<b>15</b>	<b>2</b>	<b>2</b>

Ref: PG&E Internal Data Source

### Problem Statement #1, Competition for Limited Resources

Federal customers commonly experience the following issues related to constrained resources:

- Lack of dedicated program/project management to implement EE projects
- Lack of customer expertise and EE project prioritization is low

Solutions: Problem Statement #1 Competition for Limited Resources		Solutions, detailed	
<b>Program/Project Management Support</b>	MID TERM	•	[N] Dedicated project manager funded by IOU's or other sources

### Problem Statement #2, Project Enablement

Federal customers face challenges related to project enablement, as the mandated federal contracting process often slows projects down. Additionally, securing financing is essential so that Federal customers can implement larger projects.

Solutions: Problem Statement #2 Project Enablement		Solutions, detailed
<b>Financial Resources</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Continue to provide financing solutions to enable agencies to implement larger projects.</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Support agencies with developing an internal plan/priority for pursuing EE (i.e. energy manager)</li> <li>[N] Making EE more visible – adhering to mandates and EO to reduce energy use (how to respond to unfunded mandates)</li> <li>[N] Offer a Direct Install/Self Install model oriented to federal customers with smaller, harder-to-reach facilities</li> </ul>
<b>Streamline Contracting Process</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Start with a small project to build trust</li> <li>[E] Limit start/stop nature of energy efficiency program funding cycles</li> <li>[E] Enable more robust project management and design support</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Better align our contracting processes with the customer’s internal contracting timelines which are tied to annual authorization and appropriations cycles</li> </ul>

### Problem Statement #3, Transforming the Market

A number of barriers exist in transforming the federal marketplace, primarily implementing energy efficiency projects and budgetary constraints.

Solutions: Problem Statement #3 Transforming the Market		Solutions, detailed
<b>Simplify Implementation</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[N] Offer turnkey programs that align with the needs of Federal customers, including linking programs/projects to security and reliability</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Start small by engaging federal customers in demonstration project/pilot.</li> </ul>

## EDUCATION SEGMENT

### K-12 SCHOOLS<sup>26</sup>

The recent passing of Proposition 39 made available up to \$550 million annually for eligible energy efficiency and clean energy and storage projects for K-12 schools and community colleges in California. The passage of Prop 39 represented a significant and time-bound opportunity for schools to reduce their loads in line with the Governor’s ambitious energy efficiency goals. The successful utilization of these funds requires the development of an Energy Expenditure Plans (EEP) and implementation of projects.

In response to Prop 39, PG&E developed a suite of programs and resources, above-and-beyond the core energy efficiency offering, geared specifically towards supporting local educational agencies (LEAs)<sup>27</sup> and smaller schools in leveraging the available funds. To date, PG&E staff, Energy Watch Partners, and third party programs have assisted approximately 200 LEAs in developing an EEP; however, there is much left to be accomplished before the Prop 39 planning window ends in June 2018. Statewide, as of December 31, 2015, only 700 of California’s 2,140 LEAs had approved EEPs.<sup>28</sup>

**Figure 13 – Average Number K-12 Customers, 2013-2015**

K-12 Schools	Total Electric Buildings	Total Gas Buildings	% Gas
<b>Large</b>	6,673	4,015	60%
<b>Medium</b>	1,730	911	53%
<b>Small</b>	609	479	79%
<b>Total</b>	<b>9,012</b>	<b>5,405</b>	<b>60%</b>

Ref: Internal PG&E Data Source

As seen in Figure 13, seventy-five percent of K-12 school buildings are large, and consistent with other education customers, there is significant gas usage in these facilities demonstrating a need for gas solutions.

**Figure 14 – Percent Unique and Repeat Customers and Electric and Gas Savings, 2013-2015**

K-12 Schools	Total Electric Participating Buildings	% Unique, Electric	% Repeat, Electric	Total Gas Participating Buildings	% Unique, Gas	% Repeat, Gas	GWh	MW	MM Therms
<b>Large</b>	1,921	20%	4%	1,676	28%	5%	43	6	2
<b>Medium</b>	381	17%	2%	371	31%	4%	6	1	0
<b>Small</b>	81	11%	1%	78	14%	1%	1	0	0
<b>Total</b>	<b>2,383</b>	<b>19%</b>	<b>4%</b>	<b>2,125</b>	<b>27%</b>	<b>5%</b>	<b>49</b>	<b>7</b>	<b>2</b>

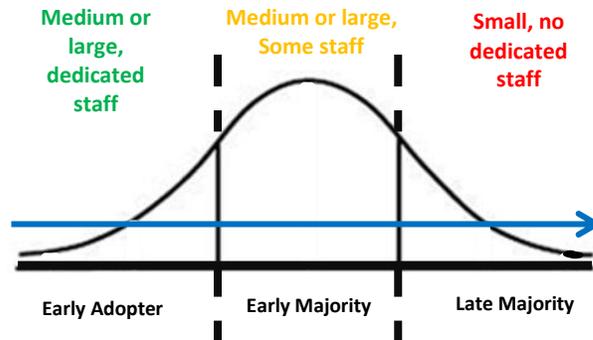
Over the course of three years, K-12 customer program participation has remained relatively flat, with a slight uptick in 2014. Medium and large size buildings tend to have higher percentages of participation.

<sup>26</sup> For the purposes of this report, public and private K-12 school data is represented together. Approximately 90% of schools data is from public K-12 schools.

<sup>27</sup> Defined as school districts, charter schools, and county offices of education

<sup>28</sup> California Energy Commission. 2016. Proposition 39: California Clean Energy Jobs Act, K-12 Program and Energy Conservation Assistance Act 2013-2015 Progress Report. Publication Number: CEC-400-2016-004-CMF. Retrieved from <http://www.energy.ca.gov/2016publications/CEC-400-2016-004/CEC-400-2016-004-CMF.pdf>

The technology adoption curve for K-12 schools is directly correlated to staff availability and size:



K-12 Public School Snapshot		
Early Adopter	Early Majority	Late Majority
<p>These schools can be mid-sized or large and are often located in affluent or urban areas. They often have a dedicated energy or sustainability manager.</p>	<p>Early Majority schools tend to be mid-sized or larger school districts with some dedicated facility staff but also more competing priorities.</p>	<p>Late Majority schools tend to be small districts (1-2 schools) and charter schools with limited staffing support for basic facility improvements let alone energy efficiency. They often take advantage of portable/modular classrooms, which do not have much potential for current EE offerings.</p>
<p><b>Entry-point to PG&amp;E Portfolio:</b> Participation in energy efficiency programs often comes along with the availability of new offerings. These LEAs proactively pursue energy planning and in 2016 the large energy efficiency opportunities have been tapped for some if not all campuses in the district. These customers need integrated offerings (battery storage, microgrids, photovoltaics), behavioral programs and sophisticated retrocommissioning options to remain at the forefront of their segment.</p>	<p><b>Entry-point to PG&amp;E Portfolio:</b> Participation is correlated with equipment failure or grant funding availability. Participation can be a result of word-of-mouth and direct outreach from third party programs and Local Government Partnerships or following the example of Early Adopter districts. Popular measures include HVAC performance measures and EMS, lighting, and demand water heaters and solar.</p>	<p><b>Entry-point to PG&amp;E Portfolio:</b> Participation is largely due to equipment failure or as a result of direct outreach through Regional Direct Install and Local Government Partnerships, leveraging turnkey offerings. Lighting is the predominant measure.</p>

## Problem Statement #1, Constrained Resources

Among the competing priorities for California public schools is the need to retrofit and modernize the existing building stock. With over two-thirds of public school buildings built over 25 years ago<sup>29</sup>, schools are an exceptional opportunity for energy efficiency planning as they modernize. However, the best intentions can fall victim to short-sightedness as a fall-out for budget pressure as examined in a 2013 Climate Policy Initiative report on schools and energy:

“School districts face severe short-term budget pressure and are counting on energy-saving projects to produce immediate budget relief through net bill savings. This budget pressure leads districts to focus on short-payback measures and measures for which generous rebates are available. They are generally not pursuing measures that cost more initially but produce greater energy bill savings over time.”<sup>30</sup>

This tendency of K-12 schools to be short-sighted in their energy and budget planning will require a high level of education at multiple levels of the organization. In addition to implementation support, we must help school leaders make the case for high performance buildings so that efficiency is better prioritized.

Solutions: Problem Statement #1 Constrained Resources		Solutions, detailed
<b>Implementation Support</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Continue proactive campaigns to reach rural and small schools that require assistance</li> </ul>
	MID/LONG TERM	<ul style="list-style-type: none"> <li>[N] Expand planning and implementation assistance to schools with an emphasis on those that do not have an energy manager. These services can include everything from a passive resource library to trainings and ad-hoc technical assistance.</li> </ul>
<b>Demonstrate the Value of High Performance Buildings</b>	MID/LONG TERM	<ul style="list-style-type: none"> <li>[N] Increase awareness of the non-energy and non-cost benefits of high-performing buildings to students, educators, and administrators (e.g. improved indoor air quality, better learning environment) through trainings and direct marketing.</li> </ul>

<sup>29</sup> Ed-Data. 2014. School Facilities in California. Retrieved from <https://www.ed-data.k12.ca.us/Pages/School-Facilities-in-California.aspx>

<sup>30</sup> Zuckerman, Julia et al. 2013. Targeting Proposition 39 to Help California Schools Save Energy and Money. Climate Policy Initiative Brief. Retrieved from <http://climatepolicyinitiative.org/wp-content/uploads/2013/05/Targeting-Proposition-39-to-Help-California%E2%80%99s-Schools-Save-Energy-and-Money.pdf>

## Problem Statement #2, Project Enablement

For many districts, the biggest barrier to achieving energy savings is a lack of technical assistance to help navigate the range of energy-saving projects and financing options available to them.

Solutions: Problem Statement #2 Project Enablement		Solutions, detailed
<b>Enhance PG&amp;E Portfolio Offerings</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[N] Re-examine the relevancy for DEER hours in workpaper calculations</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Facilitate school participation in behavior change programs that link energy conservation, energy efficiency, and student education</li> </ul>
	LONG TERM	<ul style="list-style-type: none"> <li>[N] Enhance integrated offerings for the Early Adopter schools that are positioned to pursue DG, DR and storage</li> <li>[N] Explore partnerships with statewide agencies (e.g. Department of the State Architect, Department of General Services, California Energy Commission) to align energy efficiency offerings with grant or permit approval guidelines.</li> <li>[N] Recognizing that K-12 customers have a longer lead time for projects due to increased permitting and public bidding requirements, work to align incentive changes and the public fiscal year so that customers do not experience budget shifts mid-project.</li> </ul>
<b>Financial</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[N] Work with state agencies and other utilities to plan for the end of Prop 39 funds (Note: Funds must be committed by June 2018 and spent by June 2023). Focus on keeping up the momentum, leveraging any new in-house capacity, and implementing projects that weren't addressed with Prop 39 funds.</li> </ul>
	LONG TERM	<ul style="list-style-type: none"> <li>[N] Develop guidance to create a comprehensive financing plan that addresses non-energy benefits to energy efficiency.</li> </ul>
<b>Data as a Service</b> <sup>31</sup>	NEAR/MID TERM	<ul style="list-style-type: none"> <li>[E] Continue to provide data reports to district energy managers to receive a quick snapshot of energy consumption trends across campuses.</li> <li>[E] Continue to provide energy benchmarking support and training to all customers including schools.</li> </ul>

<sup>31</sup> "Access to energy consumption data is critical for understanding baseline conditions of the state's schools, as well as for performing Proposition 39 program impact assessments." Integrated Energy Policy Report, p. 38.

### Problem Statement #3, Transforming the Market

Communities often look to schools for sustainability leadership. This may be part of the reason why so many K-12 schools in California have installed solar photovoltaic (PV). By 2014, one report claimed that there were 963 solar PV installations with over 200,000 kW in capacity in K-12 schools.<sup>32</sup> Since the rate of solar adoption is only increasing with Prop 39 and since customer eligibility for energy efficiency offerings changes with the installation of solar, we have an obligation to ensure that energy efficiency opportunities are exhausted before a school designs their solar system. Most schools have a backlog of capital improvement projects. With some creative interventions, large-scale impact is possible. For instance, we have yet to take advantage of the fact that many schools are built on the same or similar architectural plans and many more leverage portable (also known as modular) classrooms. There are over 80,000 portable classrooms in California, many of them with identical design, as demonstrated in a 2004 report to the California Legislature called, *“Environmental Health Conditions in California’s Portable Classrooms.”*<sup>33</sup>

Solutions: Problem Statement #3 Transforming the Market		Solutions, detailed
Planning for Growth	MID/LONG TERM	<ul style="list-style-type: none"> <li>[N] Recognizing that K-12 customers have a longer lead time for projects due to increased permitting and public bidding requirements, work to align incentive changes and the public fiscal year so that customers do not experience budget shifts mid-project</li> <li>[N] Partner with state agencies to flag new school construction and major modernization project to explore joint, proactive engagement with portfolio offerings like Savings by Design</li> <li>[N] Partner with state agencies to explore the potential of a portable classroom retrofit package with a short payback for common types of older portable units</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Leverage schools as a conduit to the residential community for behavior change interventions and energy conservation messaging.</li> </ul>
Energy Integration	MID/LONG TERM	<ul style="list-style-type: none"> <li>[N] Leverage lessons learned from the Prop 39 ZNE Pilot to develop a more scalable model for ZNE building retrofits in K-12 schools.</li> <li>[N] Loading order – encourage exhausting all energy efficiency opportunities before pursuing solar so that the system is right-sized and maximizes utility bill savings</li> </ul>

<sup>32</sup> U.S. Department of Energy. 2014. Brighter Future: A Study on Solar in U.S. Schools. Retrieved from <http://www.seia.org/sites/default/files/resources/9gFf68wIE7SOLAR-SCHOOLS-REPORT-FINAL.pdf>

<sup>33</sup> California Environmental Protection Agency Air Resources Board. 2004. Environmental Health Conditions in California’s Portable Classrooms. Retrieved from <http://www.arb.ca.gov/research/apr/reports/l3006.pdf>

## HIGHER EDUCATION

PG&E data for higher education combines customers at the segment level, so the following review includes University of California, California State and California Community College customers. Large buildings comprise of over 80% of the total buildings in higher education (Figure 15).

**Figure 15 – Average Number K-12 Customers, 2013-2015**

Higher Education	Total Electric Buildings	Total Gas Buildings	% Gas
Large	1,405	1,171	83%
Medium	194	145	75%
Small	97	81	83%
<b>Total</b>	<b>1,696</b>	<b>1,397</b>	<b>82%</b>

Ref: Internal PG&E Data Source, 2013-2015

Much like K-12 schools, higher education customers demonstrate relatively high levels of participation in energy efficiency programs (16% in electric and 17% in gas programs). Five percent of large buildings have repeated participation since 2013, while smaller buildings tend to participate just once (Figure 16).

**Figure 16 – Percent Unique and Repeat Customers and Electric and Gas Savings, 2013-2015**

Higher Education	Total Electric Participating Buildings	% Unique, Electric	% Repeat, Electric	Total Gas Participating Buildings	% Unique, Gas	% Repeat, Gas	GWh	MW	MM Therms
Large	410	17%	5%	374	18%	4%	55	9	3
Medium	27	9%	2%	18	11%	0%	0.5	0.1	0
Small	4	4%	0%	5	4%	0%	0	0	0
<b>Total</b>	<b>441</b>	<b>16%</b>	<b>4%</b>	<b>397</b>	<b>17%</b>	<b>3%</b>	<b>55</b>	<b>8.9</b>	<b>3</b>

Ref: Internal PG&E Data Source, 2013-2015

## UNIVERSITY OF CALIFORNIA / CALIFORNIA STATE UNIVERSITY (UC/CSU)

The University of California has ten campuses, five medical centers and three national labs of which five campuses, two medical centers and two national labs are in PG&E's service territory. There are thirty three California State University campuses in California with thirteen in PG&E's service territory.

In 2003, the University of California's Board of Regents adopted green building and clean energy policies and principles and in the following year, the President Dynes provided implementation guidelines making the university a leader in supporting environmental sustainability. The 2013 revised policy expands the policy's scope to include sustainable transportation, climate protection, building renovations, sustainable operations and maintenance, waste reduction among others.<sup>34</sup>

These early adopter and early majority customers typically access customized commercial calculated programs, the most popular being MBCx, HVAC and lighting.

### Problem Statement #1, Competition for Limited Resources

Decreasing incentive levels during the past five years have forced universities to make their energy efficiency programs less comprehensive.

<sup>34</sup> University of California Office of the President. Green Building and Clean Energy Policy Programs. Retrieved from <http://ucop.edu/sustainability/about/index.html>

Solutions: <sup>35</sup> Problem Statement #1 Competition for Limited Resources		Solutions, detailed
<b>Stabilize Project Incentives</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[N] In compliance with AB 802 and SB 350, programs would transition to meter-based savings from existing conditions with incentives that are not impacted by uncertain administrative mid-stream adjustments</li> <li>[N] Explore developing a higher education/public sector factor to reflect the higher costs of implementing construction projects in the public sector</li> </ul>
<b>Orient programs more around achieving deep retrofits</b>	MID TERM	<ul style="list-style-type: none"> <li>[N] Provide enhanced services to develop pipeline of comprehensive, deep EE projects<sup>36</sup></li> </ul>

### Problem Statement #2 Project Enablement

UC and CSU are challenged to create competitive financial proposals to compete for limited incentive dollars due to continuous policy and funding revisions. Continuous rule, practice, and incentive revisions impair the ability of these customers to create strong financial proposals to successfully compete for limited funding to implement energy efficiency projects.

Solutions: Problem Statement #2 Project Enablement		Solutions, detailed
<b>Optimize the PG&amp;E energy efficiency portfolio for the Public Sector</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[N] Grandfather existing rules for approved projects. Ensure program eligibility requirements and incentives remain constant throughout a multi-year project cycle</li> <li>[N] Limit changes to energy savings values per relevant work papers, (i.e., for EUL, IMC)</li> <li>[N] Revisit calculations as appropriate to public sector customers, such as net to gross assumptions and cost effectiveness at project level vs program level (e.g., UC Riverside), remaining useful life, effective useful life, existing baselines and industry standard practice</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[N] Provide longer period of performance on project delivery and incentive eligibility (i.e. 3-5 years vs 1 year)</li> </ul>
<b>Align programs and data with campuses</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[E] Better implementation planning at campus level and communication to utility</li> <li>[N] Leverage project delivery tools to complete project as scheduled</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>[E] Develop approaches and protocols to address these more complex public sector customers.</li> </ul>

<sup>35</sup> Adapted from the "University of California and California State University Response: Input Template for Respondents to Pre-State 2 Presentation Input Opportunity", version March 21, 2016

<sup>36</sup>A 2014 report from the UC Office of the President estimates they will need \$536 - \$767 million to pay for deep energy efficiency and cogeneration. University of California Office of the President. 2014. Deep Energy Efficiency and Cogeneration Study Findings Report. Retrieved from [http://www.ucop.edu/facilities-management-services/\\_files/deep-efficiency-and-cogen.pdf](http://www.ucop.edu/facilities-management-services/_files/deep-efficiency-and-cogen.pdf)

		Allow metering-only projects – connect to EMS (e.g. UC Berkeley)
<b>Capture true value of energy efficiency investments</b>	MID TERM	<ul style="list-style-type: none"> <li>[N] Develop a more sophisticated valuation framework for higher education/public sector which recognizes its unique costs and benefits, and illustrates the way incentive dollars leverage public funding of all types.</li> </ul>

### Problem Statement #3, Transforming the Market

One of the most significant challenges university customers experience related to transforming the market is that those self-generation customers are ineligible for program resources thus preventing UC and CSU campuses with large cogeneration systems from full program participation. A complex hourly analysis is required to establish that the savings from a given energy efficiency project is saving energy at the same hour the campus is importing from the grid, and then is only eligible up to the amount that is being imported in that hour. From the customer perspective, not all their savings counts which dilutes the economics of their projects. Over time, customers worry the cumulative effect is that less and less imports are made and they will ultimately run out of eligible savings by these rules, or at least they will be so diluted that it won't be worth their effort to participate.

Solutions: Problem Statement #3 Transforming the Market		Solutions, detailed
<b>Self-generation</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[N] In compliance with AB 802 and SB 350, programs would measure savings at the meter, which would provide real savings to the customer with a more straightforward accounting methodology, as opposed to limiting eligibility before a project begins based on a static baseline projection, and excluding carbon reducing and valuable preferred resources to the grid mix.</li> </ul>
<b>Reduce regulatory and program processes that create a barrier to getting projects done</b>	MID TERM	<ul style="list-style-type: none"> <li>[N] Recognize that the higher education/public sector segment is different as described above.</li> </ul>
<b>Orient programs more around achieving deep retrofits</b>	NEAR TERM	<ul style="list-style-type: none"> <li>[N] Whole building approach for a comprehensive deeper EE retrofit<sup>37</sup></li> <li>[N] Leverage PG&amp;E Commercial Whole Building program eligibility requirements to include master metered campus facilities with distributed generation</li> </ul>

With additional support, PG&E anticipates UC/CSU would continue to install advanced LED technology and consider installing more comprehensive controls and sub-metering in order to fine tune and better operate their buildings and individual systems. The majority of customers are all also interested in a whole building/comprehensive program offering that would tie savings to performance based incentives via data gathered at their building metering (customer owned or PG&E). Finally, interest exists for bringing on additional self-gen/distributed generation and battery technology.

<sup>37</sup> [https://www.energystar.gov/ia/business/higher\\_ed/Submeter\\_energy\\_use.pdf](https://www.energystar.gov/ia/business/higher_ed/Submeter_energy_use.pdf);  
[https://www.whitehouse.gov/sites/default/files/microsites/ostp/submetering\\_of\\_building\\_energy\\_and\\_water\\_usage.pdf](https://www.whitehouse.gov/sites/default/files/microsites/ostp/submetering_of_building_energy_and_water_usage.pdf)

## CALIFORNIA COMMUNITY COLLEGES (CCC)

Of the 72 individual community colleges districts throughout California with 34 districts for a total of 68 campuses, 36 college centers and 12 district offices in PG&E service territory. Each district operates autonomously and has unique needs regarding energy efficiency and sustainability in general.

The California Community Colleges Chancellor’s Office, in coordination with IOUs, developed guidelines for implementing Proposition 39 on behalf of California’s community college system, conducted outreach on the funding’s benefits and requirements, and identified tools for campuses to prioritize qualifying energy projects (including enrollment in Energy Star’s Portfolio Manager). California community colleges have received approximately \$123 million in Proposition 39 funds over the initial three years. As of October 2015, nearly 600 community college projects were identified, with anticipated energy savings of roughly 60 GWh and 1.3 million therms totaling roughly \$9 million in annual energy cost savings. As of January 2016, 180 closed-out projects had received \$44 million, with 24.5 GWh of verified electricity savings and 356,000 verified therm savings contributing to \$3.4 million in annual energy cost savings. Additional program funds support the training of students to install and maintain energy efficient structures and equipment. As of January 2016, more than 7,300 students statewide had enrolled in energy efficiency courses at their regional community college.”<sup>38</sup>

### Problem Statement #1, Competition for Limited Resources

CCC customers commonly experience the following issues related to constrained resources:

- Varying levels of interest/priorities
- Internal budget competition between academia and facilities; O&M
- Individuals generally wear many different hats and do not have dedicated staff to focus on energy efficiency
- Varying levels of decision making projects and funding. Each district is governed by a Board and may have one or more campuses reporting to the Board.
- Budget constraints (General Fund)
- Varying levels of building system operation expertise
- Unique building operation and occupancy schedules

Solutions: Problem Statement #1 Competition for Limited Resources		Solutions, detailed
Evolve program offerings	NEAR TERM	<ul style="list-style-type: none"> <li>• [E] Expand the internship offering</li> <li>• [N] Expand Building Operator Certification trainings</li> <li>• [N] Propose news ways of offering incentives and services; behavioral and operational (AB 802), strategic energy management (SEM)</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>• [N] Emerging technology Controls Energy management and information systems</li> </ul>

<sup>38</sup> [Integrated](#) Energy Policy Report. p 38-39.

<b>Workforce development</b> <sup>39</sup>	NEAR TERM	<ul style="list-style-type: none"> <li>• [E] Develop pipeline of diverse professionals to enter the sustainability field</li> <li>• [N] Train/develop existing workforce</li> <li>• [E] Increase sharing of energy efficiency best practices (procurement, development, lessons learned, convening relevant stakeholders)</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>• [N] Develop knowledge transfer program to address staff leaving</li> </ul>
	LONG TERM	<ul style="list-style-type: none"> <li>• [N] Train/build experts to fill the staffing gap</li> </ul>

### Problem Statement #2, Project enablement

Solutions: Problem Statement #2 Project Enablement		Solutions, detailed
<b>Provide More Turnkey and Holistic Solutions</b>	NEAR TERM	<ul style="list-style-type: none"> <li>• [N] Explore Direct Install or other turnkey offerings to make implementation easier</li> </ul>
	MID TERM	<ul style="list-style-type: none"> <li>• [N] Expand IOU value-added services (project design, project development)</li> <li>• [N] Develop a holistic energy solution incorporating strategies like energy efficiency, resiliency, energy management, and distributed generation<sup>40</sup></li> </ul>

### Problem Statement #3, Transforming the Market

Solutions: Problem Statement #3 Transforming the Market		Solutions, detailed
<b>Emerging technologies</b>	MID TERM	<ul style="list-style-type: none"> <li>• [N] Leverage PG&amp;E's emerging technology initiatives for demonstration projects</li> </ul>

<sup>39</sup> NTAR Leadership Center. March, 2013. Employer Strategies for Responding to an Aging Workforce. Retrieved from [http://www.dol.gov/odep/pdf/ntar\\_employer\\_strategies\\_report.pdf](http://www.dol.gov/odep/pdf/ntar_employer_strategies_report.pdf)

<sup>40</sup> [http://www.centerforgreenschools.org/sites/default/files/resource-files/Campus-as-a-Living-Lab\\_FINAL.pdf](http://www.centerforgreenschools.org/sites/default/files/resource-files/Campus-as-a-Living-Lab_FINAL.pdf)