THIS DOCUMENT IS SCE'S PRELIMINARY DRAFT INTENDED TO PROMOTE CAEECC AND STAKEHOLDER INPUT. ADDITIONAL CONTENT IS UNDER DEVELOPMENT, AND THE CURRENT CONTENT OF THIS DRAFT MAY CHANGE WHEN FINALIZED IN JANUARY 2017.

Southern California Edison

Energy Efficiency Business Plan

Cross-Cutting Statewide Emerging Technologies Program

DRAFT October 28, 2016

Table of Contents

I. Overview

A. ETP Overview

California's ambitious energy efficiency (EE) and greenhouse gas (GHG) reduction goals require an acceleration of the product development, assessment, and deployment lifecycle for demand-side management (DSM) technologies so that program implementers may offer customers the high efficiency equipment they need to reduce energy use.

However, this need for rapid innovation must be paired with the need for low-risk, reliable, cost-effective technologies whose energy savings can be realized and scaled for the vast and varied California marketplace.

The Emerging Technologies Program (ETP)[1] is a non-resource program that supports the California ratepayer-funded programs[2] by fulfilling six objectives:

1. Identifying technologies with verifiable energy savings that may be considered by program administrators (PAs) for incentive programs.
2. Filtering out technologies that are not appropriate for the California market, so that ratepayer-funded programs do not waste resources in developing measures[3] that cannot deliver reliable energy savings.
3. Supporting and working with technology developers to help inform future product development, so that they may ultimately build a mature supply chain for new measures.
4. Coordinating information exchanges across internal organizations, PAs, and other technology assessment organizations.
5. Helping program managers (PM) reduce risk by testing new solutions on a limited scale in the market.
6. Supporting market transformation (MT) by testing and supporting program deployment of measures destined for codes and standards over the mid- to long-term.

[1] In this document, the acronym "ET" refers to emerging technologies (or the emerging technology sector in general) or to the activities of an emerging technology workgroup within a single company. The acronym "ETP" refers to the statewide Emerging Technology Program, an organized, collaborative effort of ET workgroup stakeholders from each IOU. The ETP supports increased EE market demand and technology supply by contributing to the development, assessment, and deployment of new and under-utilized EE measures (that is, technologies, practices, and tools).

[2] See **Appendix A,** below, for more details.

[3] A technology becomes a "measure" when a program manager "adopts" it into an incentive program. For custom projects, "adoption" occurs when the incentive application is approved.

ETP's primary stakeholder and target audience is the PA and upstream and midstream stakeholders, not the consumer or technology end user.[4]

ETP is designed to help PAs meet the energy reduction needs of the most populous state in the nation through cost-effective measures that deliver reliable energy savings. ETP supports the ambitious objectives in the California Strategic Plan and legislative initiatives by directly supporting the Codes and Standards (C&S) program and California investor-owned utility (IOU) customer programs designed to meet those objectives. An innovative technology requires an effective incentive program to gain traction in the market. As a non-resource program, ETP provides information to PMs and designers who make the ultimate decision of which technologies to offer through incentive programs; these PMs also design market interventions to promote customer use of EE technologies. ETP itself does not conduct any market interventions or directly achieve market transformation.

In the technology development continuum that spans the range from initial ideation, through research and development (R&D), to prototyping and ending with commercialization, ETP's contribution is during the technology assessment and validation stages, usually post-commercialization. ETP depends on technology developers and manufacturers to create new technologies and potential products for consideration in PAs' resource programs and/or codes and standards portfolio. ETP itself cannot innovate new products and is not a technology R&D program. On the other end of the continuum, ETP relies on program implementers to conduct marketing and outreach around new measures. ETP is not designed to provide product information directly to the mass market. Finally, ETP does not provide nor set incentives for the measures. It is important for stakeholders to understand ETP's role so that its achievements and boundaries can be recognized. In an environment where portfolio cost-effectiveness is increasingly harder to achieve, and every ratepayer dollar must be carefully directed, ETP's ultimate role is to help PAs and program designers of California ratepayer-funded programs to decide which technologies can meet California's energy needs. It is also important for stakeholders to understand that technology development is a non-linear process.

B. Changes in ETP Design

ETP's three core strategies remain the same as in previous cycles, but will be coordinated and optimized statewide (SW). ETP activities will be guided by new Technology Priority Maps (TPMs), which will be developed with input from the other PAs. These TPMs will include technologies that are candidates for market transformation interventions and for codes and standards.

This new coordination and optimization will require one to two years to ramp up due to a need to develop the TPMs as well as the new program data tracking

[4] This is verified in a recent evaluation of the ETCC website (the primary means by which ETP disseminates its reports): only 7 of 81 survey respondents said they were just ET consumers, while all others categorized themselves as EE professionals, ET developers, vendors, manufacturers and distributors. The evaluators concluded that ETP was successful in reaching its intended target audience. (*PY2013-2014 Emerging Technology Program Targeted Effectiveness Study Report*, ODC, 2015)

infrastructure needed to implement the program as a statewide program. However, the ETP is structured so that this ramp up period should have little impact on ETP's functions.

Historically, the ETP allocated approximately 40–45 percent of its budget to Technology Assessment (TA), 45–50 percent of its budget to Technology Introduction Support (TIS), and 5–15 percent of its budget to Technology Development Support (TDS). The ETP has three overarching objectives to reflect the new statewide nature of the ET Program.

C. Three Objectives of ETP

The ETP is being redesigned as a statewide (SW) program pursuant to D.16-08-019.

The four IOUs have also conducted a bottom-up review of ETP and will address three overarching priorities:[5]

Objective 1: Use Technology Priority Maps (TPM) to ensure high priority areas are met.

To address the need "to ensure all high priority areas are addressed,"[6] the ETP will use collaboratively designed TPMs to drive the ETP research agenda during the time period covered in this business plan. ETP will use existing technology roadmapping efforts whenever possible to create TPMs to align with California policy and customer needs. These TPMs will seek to identify good candidates for all utility programs including market transformation initiatives (such as Codes and Standards).

Objective 2: Support a pipeline with a consistent stream of new and diverse technologies.

The ETP projects will be designed to encourage manufacturers and technology developers to create technologies that help PAs achieve their EE goals.

Objective 3: Reduce risk for unverifiable savings in utility programs

The ETP technology assessment projects will also be designed to ensure that the technologies and solutions the PAs offer will have verifiable energy savings. This is accomplished in part by early vetting of technologies and solutions that are candidates for inclusion into an EE portfolio. These assessment activities are designed to help PMs create measures that have a more robust level of assured savings.

---

5 A bottom-up review was required in D.16-08-019, p. 66.

6 D.16-08-019, p. 63, Footnote 23.

D. Why ETP Is Needed

To support PAs effectively, the ETP conducted over 300 technology evaluations and over two dozen demonstrations and showcases in the 2013–2015 program cycle.[7] These efforts have supported the development or enhancement of numerous new EE program measures, education programs, and codes and standards. Just as importantly, these efforts have filtered out inappropriate technologies that are not suited for California ratepayer programs, allowing program designers and implementers to direct limited resources to measures with reliable savings.

This work is an important component of utility EE efforts for numerous reasons. First, California's ambitious energy savings and GHG reduction goals coupled with the decline in EE avoided costs[8] place great pressure on ratepayer programs to stay cost-effective. Program implementers assume much of the portfolio risk that is inherent with offering any new or unproven technologies to customers, which can manifest in evaluation studies as low realization rates. By managing some portfolio risk through vetting by ET programs, EE PAs maximize their impacts and cost-effectiveness.

E. ETP and Market Transformation.

D.16-08-019 requires SW programs to be designed to achieve market transformation.[9] Because ETP does not intervene in the market, it is not able to achieve market transformation on its own. However, it can provide critical support to programs that do intervene in the market. ETP is ideally suited to support market transformation in three specific ways.

- The ETP will support market transformation by helping to "bring the next generation of even more efficient technologies, processes or design solutions to the market."[10] ETP will do this by working with technology developers and manufacturers to design specifications for new products. ETP has done this in the past through individual projects with manufacturers as well as through strategic cross-IOU collaborations, including the Western HVAC Performance Alliance (WHPA),[11] which was created by a SW IOU task force including ETP. WHPA has contributed a number of standards and updates to American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) Standards 90 and 180 and California Code of Regulations Title 24.
- The ETP can also help "bring the next generation of even more efficient technologies, processes or design solutions to the market,"[12] through technology introduction support. While ETP's technology introduction support

---

7 IOU internal program records
8 Avoided Costs 2016 Interim Update (Energy and Environmental Economics, 2016), p. 41-44.
9 D.16-08-019, p. 62.
10 California Long Term Energy Efficiency Strategic Plan (2011), p. 120.
11 For more information about WHPA, see its website [available at **http://performancealliance.org/** as of October 17, 2016].
12 CITE quote.

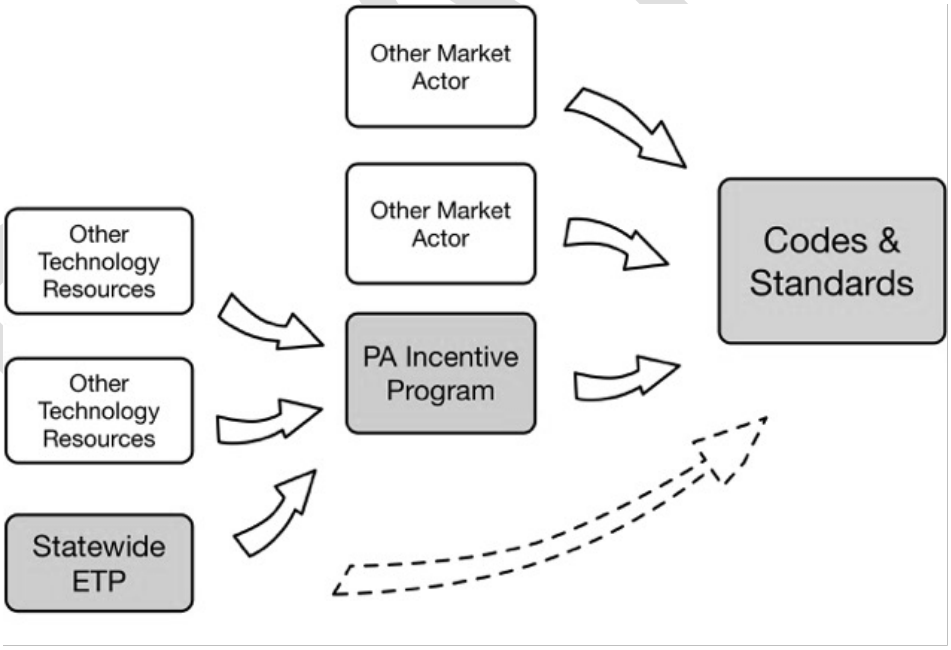
efforts are on a small scale and not expected to reduce market barriers measurably, critical data can be gathered to inform future ET studies as well as inform program designers about a technology's market viability.

- The ETP will support market transformation by continuing to conduct studies in collaboration with the C&S program so that technologies can be adopted into codes and standards. ETP is a long-standing partner to the C&S program in their efforts to gather data for Codes and Standards Enhancement (CASE) reports.

Although ETP can be the utilities' first step in initiating market transformation for efficient technologies, which can eventually end up with the higher efficiency technologies becoming a codified baseline, Figure 1 below shows that the utilities draw from multiple sources throughout their program portfolio. PA incentive programs can draw from many sources for new measure ideas, ETP being one source.

Likewise, the C&S Program can draw from multiple sources for new potential codes, with PA incentive programs being one source. In some cases C&S can bypass the process of vetting the technology in the market, which accelerates code development but may increase the risk that the technology is not viable in the market.

Figure 1: Programs Use Multiple Sources of Ideas for New Measures; C&S Uses Multiple Sources of Ideas for New Codes.



II. Vision

A. Trends and Drivers

The ETP is working to leverage various emerging industry and policy trends to meet program objectives. These trends reflect an evolving marketplace where

previously complex solutions have become technically feasible, where data is gathered and used in new ways, and where products go beyond simple "plug and play" gadgets and become complex, interrelated ecosystems.

One of the most far-reaching trends is the increasing interplay between the ETP's traditional role of supporting EE efforts and its growing role in supporting other utility activities, such as distributed generation, demand response (DR), and energy storage. This new integration of activities offers utilities the potential to provide greater value to customers by moving to a model of DSM procurement that can address grid needs in real time.

Figure 2. Multi-Pronged Building Solutions Diagram

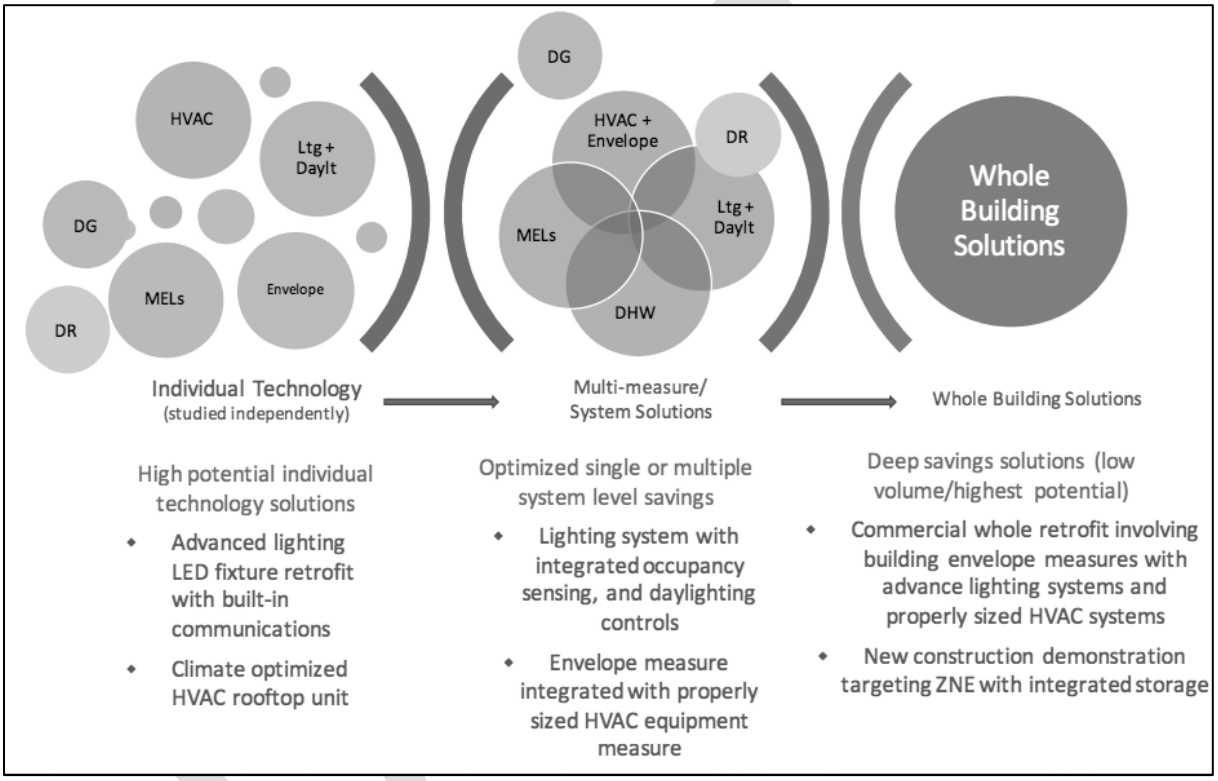


Figure 2 Note: Over the years, the ETP has evaluated many individual technologies that save customers energy, including advanced lighting and HVAC products (left). Because repeatedly reaching customers with one-time EE measures can be difficult, the ETP also pursues integrated solutions that bring together several stand-alone technologies into a single package (center). Deeper savings can be realized by going beyond integrated systems to offer whole-building solutions (right). Treating a home or commercial building in a holistic manner can have additional customer benefits, such as added controls, increased comfort or making achieving energy goals easier.

Moving forward, the ETP will continue activities in all three areas depicted in Figure 2 but will strive to deliver more precisely-targeted solutions that are in-tune with a customer's specific needs and energy savviness, while also supporting a larger engagement strategy. In turn, the understanding gained of how various customer markets embrace different EE strategies will help the ETP further refine technology delivery approaches.

Another trend relates to data analytics. There has been a proliferation of new data streams (energy usage via mobile apps and consumer "big data") coupled with new analytical tools. One example is Green Button Connect, a White-House-led initiative that enables customers to authorize their utility to provide residential and business customers' energy usage data to third-party vendors, thus empowering the customers to make better, data-driven energy decisions via new value-added services. These new tools and data can potentially streamline and accelerate ET and support Measurement and Verification (M&V) approaches.

Understanding data streams and using them more effectively will allow utilities to achieve greater customer savings by developing new behavioral programs and/or augmenting existing ones. A host of new products in this area, such as energy management systems (EMS) that intelligently optimize a building's operations in real time, are showing early success in targeting customers and delivering savings in the residential and commercial sectors. EMS have become increasingly powerful in recent years with the proliferation of inexpensive building sensors, enhanced wireless communication capabilities, and increasingly intelligent automation and analytical functionality.

Another important technology trend is the evolution of product life cycles. As more devices are connected to the Internet, traditional "widgets" can now be upgraded through a simple software update, which means that older products can always have the latest software features. This can have implications for both market adoption and savings potential. The software development cycle is faster than for hardware, so the marketplace now evolves more rapidly, and because installing new software costs much less than upgrading hardware, this evolution could reduce adoption barriers by enabling product upgrades instead of replacements. Additionally, software patches can instantly convert an already-installed technology into a new product with totally different energy characteristics that adapts to changing needs.

These technology trends could enable a shift away from seeing technologies as stand-alone to thinking more holistically about multiple systems or entire buildings. This thinking emphasizes the interplay between different systems in a building, such as a lighting system that works in conjunction with an HVAC system to meet a certain energy strategy while maintaining adequate service levels.

By thinking about building systems holistically, it is possible to design spaces so that newly added components don't interfere with the energy savings, or other operational parameters, of existing components. Furthermore, as utility EE portfolios have matured, many of the easy energy savings opportunities for individual products are no longer available. Though not yet practiced widely, taking a set of technologies that offer low savings potential individually and bundling them into one large package will allow utilities to tap into to new savings opportunities.

B. Gaps and Barriers

Three categories of barriers present challenges to working in the ET sector: technical, market, and policy and regulatory barriers. Many of these gaps and barriers present potential opportunities for ETP and some of the wider efforts it supports.

Because ETP is not a customer-facing program, it cannot intervene in the market to overcome most of the market barriers. The market barriers below are ones in which ETP can contribute to the interventions by the customer-facing programs.

1. Technology Barriers

- Based on ETP experiences, there is a lack of interoperability among systems in the absence of industry standards,[13] and
- There are digital barriers, such as cybersecurity or data format integration.

2. Market Barriers

- Reluctance of retailers, trade allies, and/or contractors to embrace new technologies that require unwanted changes in their business models.[14] (*e.g.*, a plumber making a service call might encourage a customer to purchase a less-efficient traditional water heater because the plumber is unfamiliar with the installation requirements for a more advanced, higher-efficiency heat pump water heater.) ETP can help the Workforce Education and Training (WE&T) Program address some instances of this market barrier by helping to design courses that help train contractors on proper installation methods.
- Split incentives[15] between tenants and landlords can hinder adoption of EE technologies in rental properties. ETP can help the C&S Program with development of new codes that require the installation of high efficiency equipment.
- . IOUs need information about customer technology preferences to support the design of measure offerings. ETP can help resource PMs by conducting customer research on specific emerging technologies. This will reduce information costs[16] of understanding customer responses to those technologies.[17]

3. Policy and Regulatory Barriers

- Policies are still evolving for behavioral interventions. ETP can help inform policy makers by gathering data and developing tools to help measure impacts of behavioral interventions. In 2016, ETP developed a

[13] Cite grid alliances, Zigbee Alliance.
[14] Eto, Schlegel, and Prahl, 1996.
[15] Ibid.
[16] Ibid.
[17] Note that market characterization studies that include uncovering market barriers and describing supply chains are under the purview of EM&V. ETP does not conduct market segment characterization studies, but instead conducts limited customer research specific to a particular emerging technology.

validated scale that can be used to measure the relative effectiveness of different behavioral interventions.[18]

- Policies can slow digital innovation, such as current customer confidentiality regulations that limit access to AMI data.[19] ETP can help by working with vendors that allow customers to access their own data while anonymizing customer data to the vendor.
- Different proceedings[20] for EE, DR, and DG programs create funding silos that hinder coordination of integrated DSM (IDSM) projects and customer incentives. ETP can help by testing energy management systems that can accommodate EE, DR, and DG technology, in anticipation of potential policy changes to remove funding silos.

The ETP continues to address these barriers by evaluating technical performance and product readiness (scalability), providing market data to facilitate better EE program design, and supporting (eventually) the development of new M&V.

4. Support for Regulatory and Legislative Initiatives

Through ETP's direct support of the portfolio, the ETP also works to advance underlying state initiatives and policies, including SB 350, AB 802, and AB 793. Chief among these is the California Long-Term Energy Efficiency Strategic Plan (CLTEESP), which describes such major long-term initiatives as transitioning the state's building inventory to Zero Net Energy (ZNE) and is accelerating the development and adoption of next-generation lighting and HVAC technologies. [21] Overall, 86 percent of ETP projects align with CLTEESP, according to an evaluation commissioned by the ED

In addition to the overarching CLTEESP, ETP is working to support a number of more focused state policies, including:

- **AB 802**, which includes "to-code" improvements for underperforming buildings (stranded savings), facilitates enhanced access to building performance data, and paves the way to meter-based savings for customers. In some cases, meter-based savings can require extensive submetering, and ETP has begun to assess micro current transformer (micro-CT) sensors that may someday provide inexpensive and accurate submetered data.

[18] **http://etcc-ca.com/reports/dimensions-energy-behavior-psychometric-testing-scales-assessing-behavioral-interventions**.

[19] These issues are currently being addressed by the CPUC Energy Data Access Committee, **http://www.cpuc.ca.gov/General.aspx?id=10151**.

[20] Cite proceedings here.

[21] California Energy Efficiency Strategic Plan, January 2011 Update, §2.1.1.

- **SB 350**, which seeks to double efficiency goals in the state's building stock by 2030. ETP sees integrated solutions as a key path towards doubling energy savings.
- **AB 793**, which seeks to enable smarter energy management through advanced technologies. ETP continues to assess data display and presentation solutions that can drive residential and non-residential energy savings.

III. ETP Program Model

A. The ETP Will Continue the Three Core Strategies

The ET Program will continue to use the three core strategies that form the basis of ETP activities outlined below:

1. Strategy 1: Support Technology Developers

In an effort to sustain or increase EE technology supply, ETP seeks opportunities to support EE technology development. During TDS, ETP works with technology developers to assist them in taking early-stage technologies or concepts and transforming them into market-ready products, helping bridge the gap between R&D and the market. An example of a support effort is the development of performance specifications for a technology allowing manufacturers to better target their development efforts. The TDS process has contributed to the development of more energy efficient technologies such as televisions, computer monitors, illuminated signs, and lighting fixtures.

ETP also provides training and networking for entrepreneurs and companies offering energy saving technologies at Technology Research Innovation Outreach (TRIO) events. TRIO provides information to entrepreneurs, universities, and investor firms to encourage them to submit ET project ideas using new, innovative technologies and to help them understand the utility environment. These outreach events also educate technology developers on tools necessary to develop cost-effective EE and integrated DSM technologies, programs, or professional service support.

Because technology developers are sometimes inexperienced in working with utilities and DSM programs it is important to engage them early in the development phase to maximize product impacts and ensure a healthy pipeline of measure-ready technologies. ETP will continue to support technology developers in the following ways:

- Work with product developers during the design phase to include energy performance specifications that would make the products appropriate for incentive programs.
- Motivate product developers to build integrated solutions.

- Develop a long-term vision to identify market gaps for technology innovation.
- Enhance partnerships with the California Energy Commission (CEC) Electric Program Investment Charge Program (EPIC) and Public Interest Energy Research (PIER), as well as the U.S. Department of Energy (USDOE) and other out-of-state partnerships.

Implementation metrics will be detailed in the Implementation Plans, but may include tracking activities such as the number of technology development projects launched and number of outreach events held around research priorities.

2. Strategy 2: Assess Technologies

ETP's core competency is in assessing the performance claims and overall effectiveness of energy efficient measures that are new-to-market or under-used. These assessments may build on data or information from testing at customer or field sites, laboratory testing, or other primary research studies. Assessments can also generate the data necessary for EE rebate programs to estimate energy savings over the life of the measure. These assessments support the entire program portfolio, from incentive programs to market transformation initiatives (including the C&S Program).

Assessment proposals are screened before an assessment is initiated. In the new SW PA model, ETP will develop a common set of screening criteria. These may include consideration of:

- The measure's alignment and projected contribution to EE program strategies and California Energy Efficiency Strategic Plan goals,
- The degree to which the assessment impacts the measure's adoption rate,
- The information necessary for EE program inclusion and the effectiveness of an assessment in producing this information, and
- Resources necessary to execute the assessment.

The California IOUs have developed state-of-the-art test facilities staffed with knowledgeable engineers and scientists to ensure that technology lab assessments are conducted properly. These facilities focus on a variety of key end-use measure types, including refrigeration, lighting, water heating, and air conditioning.

Technology assessment efforts seek to address measure development barriers. In doing so, it allows EE portfolios to evolve to be more solution-driven rather than the traditional technology-driven approach. Specifically, the ETP TA activities include:

- Working to develop a framework that transitions away from the traditional DSM model to consider DSM as a grid resource.
- Studying advanced methods to evaluate savings, particularly with integrated or whole-building solutions.

- Conducting customer segment-focused studies in support of solution-based interventions.
- Conducting studies focused on the performance of integrated solutions and/or meter-based approaches.
- Supporting development of new, targeted, technology-based measures for EE programs.

Implementation metrics will be detailed in the Implementation Plans, but may include tracking the number of customer segment-focused studies in each relevant business practice area, number of studies of the performance of integrated solutions and/or meter-based approaches, and number of measures offered by programs that were directly supported by ETP studies. ETP does not make the final decision on which measures are offered by programs.

3. Strategy 3: Support Market Introduction of Emerging or Underused Technologies

ETP's support of market introduction projects has the dual objectives of gathering in-situ data on customer experiences while increasing market exposure or awareness of emerging and under-utilized technologies. Introduction efforts may include demonstration of the energy savings potential of individual technologies (or a group of technologies) to assist in market penetration. ETP may also assemble the appropriate market actors for first-hand experiences with new technologies in real world settings or educate contractors on the benefits and proper installation techniques of new technologies. Additionally, the Technology Resource Innovator Program (TRIP) administers targeted, technology-focused solicitations in order to pair under-utilized, market-ready technology providers with experienced third-party implementers. These early introduction activities are conducted on a limited scale to control the variables that would affect customer experiences.

- Once products reach the marketplace, EE programs employ ETP-gathered data to inform incentive structures and address gaps in customer knowledge, and
- By seeking to understand the non-energy benefits of new technologies, the ETP can identify additional drivers for adoption, such as enhanced security, comfort, or productivity.

ETP's efforts help overcome traditional market barriers and move toward a more comprehensive portfolio by developing a robust suite of integrated solutions for deeper savings, while simultaneously retaining traditional measures. Specifically, the ETP's technology introduction support efforts include:

1. Supporting a pipeline of opportunities for the EE portfolio that balances traditional measures and products with integrated solutions.
2. Supporting development of new methods to calculate energy savings from integrated and whole-building solutions.

3. Conducting market studies focused on barriers to and drivers toward adopting integrated solutions.
4. Conducting small, targeted field deployments to test innovative offerings around integrated solutions.
5. Continuing to pursue traditional ET business roles in technology assessment that validates performance.

Implementation metrics will be detailed in the Implementation Plans, but may include tracking a number of market studies focused on barriers to and drivers toward adopting integrated solutions and a number of field deployment studies.

These future opportunities, solutions, and strategies build on years of ETP success in effectively supporting EE efforts that help bring new products to market. Among the past successful ETP initiatives are work on:

- LED streetlights
- Advanced lighting controls
- Advanced rooftop packaged units
- Ventilation controls
- Fault detection and diagnosis tools
- ZNE demonstrations
- Tankless hot water heaters
- Ozone laundry, and
- Tier 2 advanced power strips.

In the wake of successful market adoption of these solutions, the ETP is now gearing up to pursue the future opportunities described above.

B. Technology Priority Map (TPM)

At the core of ETP's approach will be the TPMs (described in Section 6), a planning instrument developed by the SW PA which will ensure all high priority areas are addressed by aligning activities across the state with the priorities outlined in the TPM.

ETP uses the term "technology research priority map" because the term "technology roadmap" is too prescriptive for a rapidly evolving *measure* landscape. ETP believes that over the period covered by this business plan, the continuously decreasing costs of centralized generation will make many traditional measures no longer cost-effective, necessitating the creation of new avenues to achieving energy savings. One such new avenue was created with AB 802, which allows claiming of stranded savings,[22] which can be claimed without any emerging technologies. As research priorities change, TPMs and associated projects can be retired, without penalty, to decrease program costs.

[22] Stranded savings refer to the savings potential of replacing old, highly inefficient equipment with equipment that meets current codes. Prior to AB 802, only equipment with above-code efficiency have qualified for rebates or incentives.

The TPMs will be developed after a review of each PA's existing ET roadmaps, and will leverage existing technology roadmaps from other entities such as CEC, EPIC, and DOE. ETP also intends to ask the ETCC Advisory Council for their insights on technology research priorities and will also seek stakeholder input on these TPMs.

ETP expects that the TPMs can be developed within the first year of the new SW model. It is important to note that each IOU already has internal technology roadmaps that they have been using to meet the needs of their own utility. During the initial TPM development period, each IOU will continue to use their own maps, which should merge seamlessly with the TPM, once developed. After the initial TPMs have been developed, updates will occur at least once per 5-year business cycle, or more frequently on an as-needed basis if all PAs agree.

The ETP is and will continue to be proactive in seeking out new technologies. This is accomplished through a variety of channels, including: partnerships, market scanning activities, attending conferences, and employing subject matter experts (SMEs) in specific technology areas. This allows the ETP to uncover market trends, determine which technologies have high potential, and present only those with reliable energy savings to program administrators.

ETP recognizes that the TPMs should follow development of new technology or measure trends, and will not rigidly follow a TPM for the sake of adherence. However, ETP intends to draw upon the expertise of advisors such as the Emerging Technologies Coordinating Council (ETCC) Advisors when considering whether to sunset a TPM and its associated projects. ETP will also seek stakeholder feedback before making a final decision.

IV. Collaboration, Outreach, and Information Dissemination

To advance the goals of the ETP, provide transparency, and create a technology marketplace, the ETP engages in following outreach and information dissemination activities.

A. Emerging Technology Coordinating Committee (ETCC)

The primary avenue for collaboration among ETP members is through the Emerging Technology Coordinating Committee (ETCC). ETCC's coordination strategy is to bring together member utilities (including their ET and ET-related departments, such as EE, DG, and DR), national and international ET groups, and technology stakeholders in order to provide a common framework for assessment, reporting, and program development.

This strategy has had a beneficial outcome in reducing duplicate efforts in technology development, assessment, product introduction support, and vendor relationships. Furthermore, by combining the efforts of multiple major utilities, this kind of collaboration can help achieve the "critical mass" that encourages developers and manufacturers to develop CA-appropriate technologies.

ETCC activities include a number of outreach components to ensure that the ETP works as transparently and effectively as possible. This includes quarterly meetings

around the state that are aimed at particular customer segments (commercial, residential, industrial, agricultural, and integrated systems) with the goal of highlighting innovation in each sector. The ETCC also holds a major conference — the ET Summit — every two years that brings together over 500 ET stakeholders, including leading experts, product developers, entrepreneurs, regulators, investors, delegates from government agencies, gas and electric utilities, and academia. Other ETCC events include symposia that educate third parties on doing business with utilities, Open Forums that serve as platforms for tech companies to introduce their products to utilities, and regular ETCC Advisory Council activities that bring North American utility and industry ET voices to the ETCC.

B. Third Party Solicitations

The TRIP administers targeted, technology-focused solicitations in order to pair underused, market-ready technology providers with experienced third-party implementers. TRIP aims to achieve greater market acceptance of new technologies through customer incentives, education, and technical assistance to help overcome market barriers. Participants in the TRIP program may include entrepreneurs, third-party vendors, investors, EE and DR companies, and universities. Winning bidders will be funded by ETP and their contracts will be managed through the IOU third-party programs.

In addition to TRIP, ETP has supported IDEEA365 solicitations by reviewing bids that include an emerging or underused technology, and when appropriate, has considered non-winning technology vendors as candidates for partnering on technology assessments.

C. Other ET Collaborations

Though ETCC is the largest collaborative effort across the ETP, the constituent utilities are highly active in a number of additional consortia, initiatives, and groups. Partners of these collaborative efforts fall into six categories:

1. Technology adopter groups, including owners, tenants, and property managers.
2. Utility stakeholders, including utility ET groups in California and other states as well as non-ET utility stakeholders, such as staff working on electric vehicles (EVs), energy storage, and distributed generation, and utility marketing, legal, and regulatory departments.
3. Research entities, including the Lighting Technology Center, Western Cooling Efficiency Center (which was co-founded by the IOUs and UC Davis), national laboratories, and the Advanced Research Projects Agency-Energy (ARPA-E), as well as individual researchers funded by the US DOE.
4. EE technology commercialization actors, including technology developers and financiers as well as clean tech accelerators such as:
    - US DOE's FloW (First Look West, a regional component of US DOE's National Clean Energy Business Plan Competition),

- Cleantech Open (a nonprofit organization for clean tech entrepreneurs),
- The CalSEED (California Sustainable Energy Entrepreneur Development) Initiative,
- The CEC's Efficiency and R&D Divisions, including the EPIC and PIER programs, and
- Strategic organizations and consultants, including the Consortium for Energy Efficiency (CEE), E Source, New Buildings Institute (NBI), American Council for an Energy-Efficient Economy (ACEEE), Davis Energy Group, Fisher Consulting, Electric Power Research Institute (EPRI), Gas Technology Institute (GTI), and engineering firms.

ETP has a long history of strategic collaborations both across utilities and with the entities listed above. Some recent successes include:

- **WHPA** http://performancealliance.org/, described earlier.
- **West Coast Utility Lighting Team** (WCULT), which is a spin-off of ETP that originally addressed technical issues in lighting and then expanded to address program operation and lighting market barriers across five states.
- **ET Lighting Group** (as yet unnamed), a spin-off of WCULT that returns to its technical roots. Research on emerging lighting technologies had taken a back seat as WCULT expanded to address programmatic issues.
- **Energy Efficient Laboratories**, the electric utilities recently started a collaboration with the Center for Energy Efficient Laboratories and have to date funded a market research study on EE in laboratories. This market study will inform a research priority map to guide future ET projects in this field.

D. How Does the ETP Support Other Utility Efforts?

The ETP supports the EE program portfolio in several ways. ETP provides key support in identifying technology trends by scanning and evaluating new technology opportunities in a robust, deliberate manner that helps mitigate the risks of adopting new EE measures. This ensures that a reliable, predictable resource base exists for EE efforts. Utility programs benefit from reduced savings risk. By identifying products that are too immature for the market, ETP activities can mitigate the risk of underperforming technologies.

1. ZNE

ETP provides core support to ZNE and also collaborates with ZNE on projects: California's aggressive ZNE goals are intended to build new, resilient, and improved existing buildings and communities so that they not only provide comfort and low operational costs to occupants, but also support enhanced grid reliability[23].

[23] California Long Term Energy Efficiency Strategic Plan, CPUC, 2011.

ETP has worked closely with the building and design community to construct residential communities and retrofit commercial buildings that demonstrate value to both the owners and occupants and the capabilities to reduce and dispatch electric loads in real-time to address grid constraints and needs. The results from those initial efforts have demonstrated benefits to the grid, while attracting the building and design community.

2. Customer Programs as Grid Resources

With the rapid increase of both utility-scale renewables and behind-the-meter (BTM)[24] distributed energy resources (DER) on the grid, it is becoming increasingly challenging to manage the imbalance between power supply and demand in real-time, particularly because the balance can fluctuate within seconds. These fluctuations occur at both the system-wide level and at the neighborhood level (*e.g.*, substation, transformer). Fortunately, ETP can play a role in helping to overcome such grid challenges by working in concert with programs and technologies on both sides of the meter to deliver resources capable of responding to grid needs.

3. How ETP Collaborates with Other Programs

In the vision of IDSM, PAs can combine different types of BTM technologies into one incentive program for end customers. In such a scenario, EE technologies would combine on-site solar, battery storage, and/or traditional and new demand-response technologies. Such a system would provide the ability to dispatch certain loads (*e.g.*, lighting, HVAC) and the battery systems for both the utility and the wholesale markets.

One strategic way to align those efforts would be to place the IDSM-capable technologies into the ETP TPM and run joint technology assessments, scaled projects, and demonstration showcases together with the other BTM teams, when applicable. ETP has and will continue to coordinate with DSM in the future, including:

- Collaborating with DR and EM&T programs to discover and validate technologies that provide value in terms of reduced energy consumption during peak hours. One of many examples of such a technology is Energy Management Systems (EMS).
- Researching the potential of combined building EMS, solar, storage, and DG for the small- and mid-sized commercial segment. This research could not only validate energy savings, but may also help to better understand the customer value of these combined systems and highlight potential barriers to adoption.

[24] "Behind the meter" refers to any activity, technology, or infrastructural elements that occur before electricity or gas enters a customer's home or business through the meter. This includes centralized generation and transmission, grid management, and utility storage.

- ETP has collaborated with EV teams to understand the EV charging infrastructure with the eventual goal of delivering effective energy management options using advanced controls that will facilitate time-of-need charging.

4. TDSM or Locational / Preferred Resources

In the future, IDSM efforts could be targeted to specific physical locations on the grid, through efforts known as targeted demand side management (TDSM). TDSM's greatest value is in allowing for the deferral of capital investments on the grid through targeted load reduction specifically at the place where grid investment is needed (*e.g.*, substations, feeders, transformers, etc.).

Working closely with both the other BTM and grid-side teams, ETP brings an EE element to locational targets on the grid. This can be achieved through joint pilots in targeted locations, as well as projects to determine which EE technologies are applicable based on load shapes, customer segments, and operational processes.

The ETP also helps enable "Locational DSM" endeavors to increase grid reliability and/or defer infrastructure upgrades by:

- Collaborating with internal groups and other programs, such as the DR and DG programs to identify how demand-side energy management systems interact with the grid, and
- Running field deployments that evaluate relevant technologies such as residential battery storage, combined heat and power (CHP), solar, and building EE technologies.

V. Benefits for Diverse Stakeholders

A. Customer Benefits

The work of the ETP impacts a diverse array of customers through utility resource acquisition programs across California's geographical regions and market sectors, including the residential, commercial, industrial, agricultural, and public sectors. Regardless of location or segment, the most important customer needs are for comprehensive solutions and low costs.

However, ETP itself is not a customer-facing program. Rather, it supports the utilities by ensuring the availability of appropriate measures for customer incentive programs. Because energy is a low priority for many customers, bundling energy-saving opportunities together into multi-measure or whole-building offerings and offering upstream and midstream solutions are effective strategies to achieve savings goals. To reach these goals and help utilities serve customers effectively, ETP evaluates technologies that support the development of new, cost-effective EE measures while helping to sustain legacy programs.

The ETP's work can affect customers indirectly. End-use customers can benefit through the reduction in time it takes viable new products to enter the marketplace due in part to ETP's assurance to PMs that an emerging technology is suitable for their program. However, the baseline for the counterfactual is extremely difficult to establish. For example, evaluation studies assessing the effectiveness of utility incentives in accelerating CFL adoption rate in California had difficulty finding a comparison state due to California's progressive populace. Also, because ETP does not set incentives or design outreach, the ultimate adoption rate is not within ETP's sphere of influence.

B. Partner Benefits

1. Internal Partners

The ETP program collaborates closely with other utility departments, such as C&S. This collaboration can help advance mutual goals, such as understanding motivations and overcoming barriers among home buyers and builders in order to meet ZNE mandates.

Additional collaborative efforts between ETP and C&S may include:

- Joint memberships in organizations such as the ASHRAE, which brings together emerging technology experts, leaders from the HVAC industry, and C&S specialists to advance new equipment, building, and testing standards.
- Seeking out and evaluating emerging "code-ready" technologies that present such rapid adoption potential that they can become baseline much sooner than most other technologies. Because these efforts affect both groups, they work closely to share data and ideas for achieving maximum internal efficiencies and streamlining the adoption process. Because code-ready technologies vary in their impacts and applicability, there is no linear template that can be used for this process.

Elsewhere, there is significant collaboration between the ETP and WE&T Program. The ETP shares data, identifies barriers, and provides technical information to supplement WE&T outreach and education efforts.

The collaboration between ETP and WE&T also includes helping raise awareness and advance understanding of California's ZNE efforts. As utilities turn to more integrated and whole-building EE solutions, ETP and WE&T will collaborate by examining barriers to and drivers toward adopting integrated solutions. The information gathered will be useful for future education and training programs for homebuilders, commercial architects, facility operators, and trade allies.

2. External Partners

a. CEC

The CEC and ETP have partnered on a variety of projects and initiatives. The CEC is a member of the ETCC, along with the major California IOUs. Additionally, the CEC has funded some ETP activities, such as alternative programs aimed at training unemployed workers for jobs emerging in the recovering economy.

b. The California Technical Forum (Cal TF)

Cal TF is a panel that seeks to review energy savings estimates and technical performance related to California's EE programs. As a new organization, Cal TF has not yet collaborated closely with the ETP, but the program will evaluate future partnership opportunities.

3. Community Benefits

Beyond traditional technology evaluations and market interventions, the ETP serves other beneficial purposes. One of these is ETP's work on natural and alternative refrigerants. Older types of refrigerants found in appliances, air conditioners, and industrial equipment are harmful to the ozone layer and act as powerful GHGs. The ETP supports the phase-out of these compounds by working to verify the viability and energy savings potential of new alternatives.

Another critical issue facing California is an ongoing drought that has strained water resources. Recognizing a link between water and energy, the so-called "water-energy nexus," the ETP is working with utility agriculture stakeholders to find and accelerate adoption of energy-saving technologies that also deliver water savings.

The ETP also works to support the conversion of the transportation sector away from petroleum to electricity- and natural gas-powered vehicles. The ETP has collaborated with the EM&T Program to understand the charging infrastructure for electric vehicles, with the eventual goal of delivering effective energy management options through advanced controls that will facilitate time-of-need charging.

Go on to the next page

VI. Strategies, Targets, and Milestones

Sector Metric Table - Cross-Cutting Sector: Emerging Technologies Program								
Problem Statement / Core Strategy	**Desired Effects**	**Implementation Strategies**	**Milestones**	**Baseline**	**Metric Source**	**Short-Term Target (1-3 years)**	**Mid-Term Target (4-7 years)**	**Long-Term Targets (8-10+ years)**
There is a need to "ensure all high priority areas are addressed"	ETP will leverage existing technology road mapping efforts and create/modify technology roadmaps to align with California policy and ratepayer needs.	**Sub-strategy 1:** Develop and refine Technology Priority Maps Tactics to be provided in Implementation Plan **Sub-strategy 2:** Disseminate Technology Priority Maps (TPMs) to stakeholders. Maps will drive ETP projects, from the top-down. Tactics to be provided in Implementation Plan: ETCC meetings, Biannual ET Summit, IDEEA 365/TRIP solicitations, TRIO, Open Forum	(under development) Complete TPMs Implement TPMs	n/a	n/a	• Identify areas with need for TPMs • Complete and implement TPMs	Assess and update TPMs	Assess and update TPMs
There is a need to support a healthy technology pipeline for measure development	ETP projects will be designed to encourage manufacturers and technology developers to create	**Sub-strategy 1:** Work with new technology vendors, manufacturers, entrepreneurs **Implementation Plan tactics:** TRIO, CalSEED Tech Development Support	• (under development) • Phase 1 goal: identify need for new technologies and manufacturers/developers willing to partner with ETP	n/a	Program Tracking Data	All TPM v1.0 projects are identified, assigned and completed, Phases 1-5	All TPM v2.0 projects are identified, assigned and completed, Phases 1-5	All TPM v3.0 projects are identified, assigned and completed, Phases 1-5

Sector Metric Table - Cross-Cutting Sector: Emerging Technologies Program								
Problem Statement / Core Strategy	**Desired Effects**	**Implementation Strategies**	**Milestones**	**Baseline**	**Metric Source**	**Short-Term Target (1-3 years)**	**Mid-Term Target (4-7 years)**	**Long-Term Targets (8-10+ years)**
	technologies that can be relied upon to meet California ratepayer needs for energy efficiency.	**Sub-strategy 2:** Work with universities and colleges **Implementation Plan tactic:** RocketFund **Sub-strategy 3:** Meet PA requests to work with specific technologies and technology developers, including C&S requests, WE&T requests, etc.	• Phase 2 goal: identify ways to support developers in developing or specifying new technologies • Phase 3 goal: Provide support identified in Phase 2 • Phase 4 goal: Identify next steps (lab testing? Pilot testing?) • Phase 5 goal: Hand off to implementer of next steps identified in Phase 4					
PAs have a need to know which technologies would and would not be suitable for	ETP will vet technologies and solutions that aren't yet ready for inclusion into an EE portfolio.	**Sub-strategy 1:** Conduct TPM-driven Technology Assessments Implementation Plan tactics: • Field studies • Lab studies Demonstrations	(under development) • Phase 1 goal: identify need for new technologies and manufacturers/developers willing to partner with ETP	n/a	Program Tracking Data	All TPM v1.0 projects are identified, assigned and completed, Phases 1-5	All TPM v2.0 projects are identified, assigned and completed, Phases 1-5	All TPM v3.0 projects are identified, assigned and completed, Phases 1-5

Sector Metric Table - Cross-Cutting Sector: Emerging Technologies Program								
Problem Statement / Core Strategy	**Desired Effects**	**Implementation Strategies**	**Milestones**	**Baseline**	**Metric Source**	**Short-Term Target (1-3 years)**	**Mid-Term Target (4-7 years)**	**Long-Term Targets (8-10+ years)**
incentive programs.	These activities result help program managers create measures that have a more robust level of assured savings.	**Sub-strategy 2:** Test TPM-driven Solutions Implementation Plan tactics: • Scaled Field Placements • Data collection on technology performance and customers • Demonstrations – Data collection on technology performance and customers • Showcase – Visitor Surveys TRIP, IDEEA365	• Phase 2 goal: identify ways to support developers in developing or specifying new technologies • Phase 3 goal: Provide support identified in Phase 2 • Phase 4 goal: Identify next steps (lab testing? Pilot testing?) • Phase 5 goal: Hand off to implementer of next steps identified in Phase 4					
		Sub-strategy 3: Meet PA requests for assessments of specific technologies						

VII. EM&V Considerations

A. Evaluation Needs Preparedness

The utilities are currently updating the ETP tracking database to include data on both factors under ETP control and factors not under ETP control. See examples below.

Example of Factors Under ETP Control	Example of Factors not Under ETP Control
• Number of TDS, TA, and TIS projects initiated	• Proportion of technologies filtered out as "not appropriate" versus those as selected as candidates for further ETP assessment • The amount of savings resulting from ETP-vetted measures • Length of a project, etc.

These updates will meet ETP's needs in the short term. The ETP database will be designed to track information that can be gathered during the course of program implementation.

ETP's evaluation needs in the longer term require significant development of additional infrastructure to track coordination and optimization according to the TPMs, as well as window-of-opportunity projects that may not be on the TPM.

Evaluation preparedness will be discussed in detail in the Implementation Plans.

B. Considerations for Future ETP Evaluations

Utility ET efforts are designed to assume many of the business risks associated with maintaining a highly-effective EE portfolio. ETP is tasked with helping DSM PAs determine whether a technology would be suitable for incentive programs. ETP will be considered successful if it both identifies potential new measures as well as filters out inappropriate technologies.

As a supply-side program, a resource-based impact evaluation can be problematic when applied to ET. Tying ET to such a model of only counting technologies that are adopted into the measure portfolio discourages the calculated risk-taking upon which the ETP has built a credible, long-term track record. Counting only adopted technologies sets faulty incentives for ETP to only focus on low-risk measures with high likelihood to become IOU program measures. ETP fulfills several functions for the EE portfolio, including identifying and supporting measures with high value-add for the portfolio, but also pursuing some "high risk, high reward" measures. ETP's program metrics need to track both adopted technologies and filtered technologies to accurately reflect ETP's value in preventing ineffective technologies from being offered by PMs.

While the ETP is in favor of tracking the impacts of its work in terms of EE program outcomes, there are additional indicators that should also be considered to accurately gauge its success. Tracking the number of new measures recommended by

ETP, as well as their market uptake, is an interesting exercise, yet neither the number of new measures nor their market uptake rate is under ETP's sphere of influence. ETP evaluations should also take into consideration nation-wide trends and challenges, such as the difficulty in finding cost-effective measures for the residential sector, which is not a problem specific to California.

At the sector level, ETP should be considered a success if it meets its three objectives (described in Section 3). Evaluations of ETP will be the most informative if they consider what ETP can and cannot control.

VIII. Appendix

A. Whom Does ETP Serve?

The ETP serves resource acquisition programs as they develop new measures. Additionally, ETP supports C&S, gathering data for CASE studies. ETP operates where emerging technologies and utility programs intersect. This section describes the needs of internal utility customers, the utility measure development process, and some characteristics and trends in the energy-efficient technology landscape to provide a better understanding of the context within which ETP is implemented.

B. The Utility Measure Development Process

Measure development refers to the process by which DSM PAs decide which technologies to include in the incentive programs. A clear distinction needs to be made between an energy efficient technology and a measure which has passed through utility review at multiple levels and may encompass more than just a widget.

The measure development process differs at each utility, and requires coordination and input across multiple business functions. A recent study[25] on utility measure development looked at the measure development processes at the four IOUs, plus LADWP and SMUD. It showed that these processes were highly idiosyncratic to each utility, and involved staff in engineering, product management, program management, analytics and forecasting, strategy, evaluation, marketing and communications, large customer account management, vendor alliance management, and processing operations. Across the utilities in the study, different teams play different roles, at different decision points. *For example*, the evaluators found that PG&E has six gates in their stage-gate process for measure development, while SDG&E has three.

The ETP is but one contributor to this process, which applies both residential and non-residential measures. Across these teams, each utility must effectively determine the technology's estimated market potential, whether the supply chain is in place, whether a vendor network can support installation and service, which customer segments might have a higher propensity to purchase and install, what level of penetration is required for the measure to become cost effective, what the market barriers might be for each customer segment, and how to design a program to

[25] **Evergreen Economics, 2015**, available at: http://tinyurl.com/hs8nfgg

overcome those market barriers. While ETP can and has contributed much of this information in the course of its activities, neither the sole responsibility nor the sole credit for emerging technology adoption belongs to ETP. ETP staff do not make the ultimate decision whether a technology is offered as a measure through a resource program.

C. Innovation and Measure Evolution

Innovation and measure evolution often start at the local level. The measure development process itself is not a linear process, but in many utilities nationwide, particularly those without a separate emerging technology assessment division, new technologies for the nonresidential sectors are first installed through calculated projects at a local site. As more customers include the technology as a measure in incentive projects, the PA can use market interest as an indicator that it may be more efficient to deem the savings from the technology, rather than requiring a custom calculation for each project[26]. Technologies can also be deemed as measures without first going through the proving grounds of calculated projects, but a greater degree of review is needed to determine the level of market risk.

ETP also plays a critical role in custom projects, which are often the first point of entry for a technology into the measure development process. ETP's assessments are regularly shared with utility business account executives who offer custom measure options to large nonresidential customers that can deliver deep energy savings due to the high energy usage of those customers.

The phases of measure evolution from calculated to deemed is important because it mirrors the different phases of innovation and technology maturity and drives the overall ETP approach presented in this Business Plan. The (now closed) U. S. Office of Technology Assessment's book *Innovation and Commercialization of Emerging Technology*[27] shows that in the early stages of a technology's lifecycle, products are diverse, often including custom designs.[28] During the growth phase, one product design emerges as being stable enough to have significant production volume. During the maturity phase, there are multiple product manufacturers and products have become similar enough that parts are standardized and warranties are inherent to its value proposition. Finally, in the introductory phases of a technology, a manufacturer's competitive strength comes from being able to deliver a reliable, functional product.

Overall, as the technology matures, the emphasis shifts from reliability concerns to economizing on production costs to offering the same functionality at a lower cost. Throughout the stages of technology maturity, the overall trend is from customized to standardized product designs, trading off between intensive use of resources at a

---

[26] Custom measures are not available for single family residential customers.

[27] U.S. Congress, Office of Technology Assessment, Innovation and Commercialization of Emerging Technology, OTA-BP-ITC-165 (Washington, DC: U.S. Government Printing Office, September 1995). Available at **http://ota.fas.org/reports/9539.pdf.**

[28] This table is a synthesis of William J. Abernathy and James M Utterback's "Patterns of Industrial Innovation," Technology Review, June/July 1978.

distributed level to an intensive use of resources at a centralized level, realizing gains from economies of scale.

Similarly, measures also have a lifecycle. Measure evolution also progresses through these phases and reflects similar characteristics. A new technology can become a measure as soon as a custom incentive application is approved with calculated savings that meet an energy reduction need. An example of this evolution is LED parking lot lighting that first began as a custom measure and later evolved into a deemed measure. Over time, certain measures will prove to be more popular with customers. At this point, the utility program administrator may consider reducing the costs associated with implementing the measure[29] and begin to explore whether the measure should be deemed instead.[30]

The design of the SW ETP incorporates the natural progress of technologies and measures from customized to standardized (that is, deemed), from localized to centralized (that is, SW mid-stream deem measure offer), and from standalone technologies to integrated solutions. This natural progression not only requires that high levels of emerging technologies expertise be available at the local and statewide program levels, but also that the task of scanning and screening new technologies and ideas be distributed through as wide a network of emerging technology professionals as possible. The design of the ETP leverages the entire network that has been built by ETP SMEs throughout ETP's almost two decades of operation.

[29] Note that these costs are not just borne by the utility, as customers must also spend a lot of resources and time developing and receiving approval for custom projects.

[30] As a measure evolves further and gains even greater customer interest, the measure may be considered for code, or for upstream and midstream programs.