Open Energy Efficiency

Comments for Staff Proposal for Incorporating Energy Efficiency into the SB 350 Integrated Resource Planning Process (EE-IRP) / Oct 31, 2018

Introduction

The Staff Proposal for Incorporating Energy Efficiency into the SB 350 Integrated Resource Planning Process (EE-IRP) is among the most important considerations the Energy Division has before it. OpenEE provides comments that we hope can shape the prioritization and valuation of energy efficiency as a resource and set up structures that will enable it to scale and make the expected significant contributions to the aggressive decarbonization goals set by the state. We also respectfully request that Energy Division host a public forum to discuss the staff white paper and the technical reports to support understanding and dialogue prior to a final decision on the path forward.

Summary of Comments

Energy Division has clearly put a great deal of thought into the transition and coordination needs for the Integrated Resource Plan (IRP) and the current energy efficiency potential and goal setting process for the state. The existing system of feedback loops and inter-agency collaboration has been important to represent energy efficiency in the IEPR (Integrated Energy Policy Report) and the historic Long Term Procurement Plan (LTPP) and now in the IRP. However, SB-350 Clean Energy and Pollution Reduction Act of 2015 calls for a more dramatic shift in the quantification and forecasting frameworks that have historically supported energy efficiency in the state in order to truly drive the scaling of energy efficiency through competitive procurement pathways. This is additionally heightened by the State's new SB100 commitments to 100% decarbonized electricity by 2045.

We agree with staff that not all energy efficiency can be optimized in the IRP process, but we believe that whatever can be optimized should be, and that IRP optimized efficiency should be the priority for capturing energy savings through competitive procurements in the state. It is now possible to derive consistent meter-based quantification of energy efficiency impacts, from goals and potential, through program implementation requirements, reporting, and procurement.

Measure-based quantification, currently the dominant means of estimating savings, may still be useful for identifying certain aspects of potential, but should not be driving the forecasting, programmatic decisions, or cost effectiveness testing any longer. With our available data infrastructure, streamlined performance program designs, and time valued savings, the entire system of investing in energy efficiency can be updated. We provide alternative approaches in our comments to help address this transition. We believe that SB350 sets out clear obligations to quantify energy efficiency on the basis of normalized metered energy consumption where

possible, and to optimize distributed demand side energy resources alongside supply side options.

Our primary comments on the staff white paper are listed in this section. Preliminary answers and suggestions based on Energy Division's specific questions are in the second portion of the document. We look forward to further conversations with Energy Division, their consultants, California Energy Commission and the multiple working groups that will likely emerge in this transition.

1. The recommendations appear to be **constrained by the measure-based view** of the energy efficiency "system." Historic approaches to estimate potential and deliver efficiency seem to take precedence over the core need of the IRP to have consistent valuation across resources and the opportunities to deliver and regulate energy efficiency in a consumption based market framework to meet that need.

    a. Specifically, SB350 and AB802 both included direction to re-define savings as a change in overall consumption relative to an existing conditions baseline as the default. Discussion of this component of the law is noticeably absent and not adequately reflected in this plan.

    b. Quantifying a change in consumption (up or down at the meter) as a foundational principle to offer comparable frameworks across resources aligns with carbon reduction objectives. It also enables a refocusing toward integrated interventions that drive value in a decarbonized grid, instead of being stuck in the siloed approach of one intervention at a time.

    c. Historic measure-based valuation as reflected in the goals and potential study, and the DEER and work paper requirements, will significantly limit the kind of scale needed for energy efficiency investments to achieve the State's ambitious goal of doubling energy efficiency, optimizing IRP (SB350, 2015) or the SB100 goals of a 100% decarbonized grid adopted in 2018.

2. To make this transition effectively, **value and loading order needs to be a priority to set the stage for the IRP to inform local procurement opportunities**.

    a. Energy Division should prioritize IRP needs for consistency in valuation. While energy efficiency may demonstrate different characteristics, it is energy efficiency that needs to adapt to demonstrate value in the IRP, not the other way around.

    b. We urge the Energy Division staff to abandon tweaks to the cost effectiveness calculator to address these needs. Energy markets need a cleaner separation between the type and value of energy efficiency and other resource needs. More straightforward metrics of levelized or marginal cost need to offer a consistent comparison in the IRP, and allow that comparison to provide the common framework for local procurements of resources as well.

c. The staff white paper notes that the Distributed Resource Plan (DRP) and the Integrated Distributed Energy Resource (IDER) are "best suited to identify opportunities to use DERs to defer distribution system upgrades…" We agree.

d. With consistent guidelines for meter-based quantification of consumption reduction, IDER procurements can bring energy efficiency and other DERs needed online where they are needed most. Deferred distribution system upgrades should be the FIRST path to procure energy efficiency and allow the statewide portfolio to fill in the gaps, rather than categorizing local needs as incremental to the broad energy efficiency portfolio,.

e. The myriad of energy efficiency investments that support resource acquisition, from training and education, to codes and standards, to market transformation writ large can either continue to be supported by ratepayers for their incremental contributions with an alternative value structure or their cost could be supported by cost effective C&S savings.

3. Energy Division has taken a great step in laying out the myriad issues to consider in the transition to IRP optimization. However their recommendation of beginning coordination and model refinements with the 2021 G&P study and waiting to take action until 2023 appears to be an **unnecessary delay for an urgent update.**

    a. CPUC and CEC can conduct a parallel potential analysis now to support a meter-based consumption alternative to measure-based bundling scenarios.

        i. In early 2018, the CEC analyzed naturally occurring changes in energy consumption and has developed a tool to filter and isolate sector-building combinations to analyze consumption across the state. This short video illustrates the power of metering everything for planning and forecasting purposes demonstrated through this preliminary project.

        ii. CEC and CPUC has the historic data needed to track meter-based savings for past programs; they could use this data to calibrate the forecast wherein sector level metrics for potential are the right path to take. Going forward, hourly metered data can be the foundation of these analyses.

    b. Regardless, the specific questions that need to be answered should be put on a fast track with time specific deliverables from all working groups in the upcoming year.

4. The proposed updates to the Rolling Portfolio should **include leveraging reported savings derived from embedded M&V** rather than just from measure-based evaluation and DEER updates.

a. The “bus stops” for EM&V and DEER updates and are an important component in ensuring the most up to date measure-based estimates for the potential analysis, but these updates’ given prioritization can represent a relatively small portion of the portfolio.

b. Staff note in the text that evaluation timing can be improved, or shortened, with faster feedback and automation. It can be shortened even further, and deliver improved data streams, when resource acquisition programs report results that could directly inform the G&P and the forecast and juxtaposed with statewide consumption data.

c. The Commission has noted the value of meter-based performance in third party deployment (in D.18-01-004), but has not required it. Energy Division should consider requiring meter-based program level load shape consumption change reporting (based on embedded M&V and standard approaches such as those included in CalTRACK) to the Commission in the annual report to support robust analysis of the portfolio load shapes and the sector-building type analysis.

OpenEE provides more detail on these general concepts in the context of the specific questions asked by the CPUC staff and welcomes the opportunity to discuss and answer questions about these suggestions. Our interest is to support the CPUC, CEC, program administrators, and market actors to develop a glide path of analysis and policy modifications that will enable energy efficiency to demonstrate its value to the grid through the integrated resource plan and ultimately competitive procurements grounded in meter-based quantification of changes in consumption, demonstrated from a range of integrated demand side interventions

Policy

How does optimization help further the objectives of SB350 for energy efficiency?

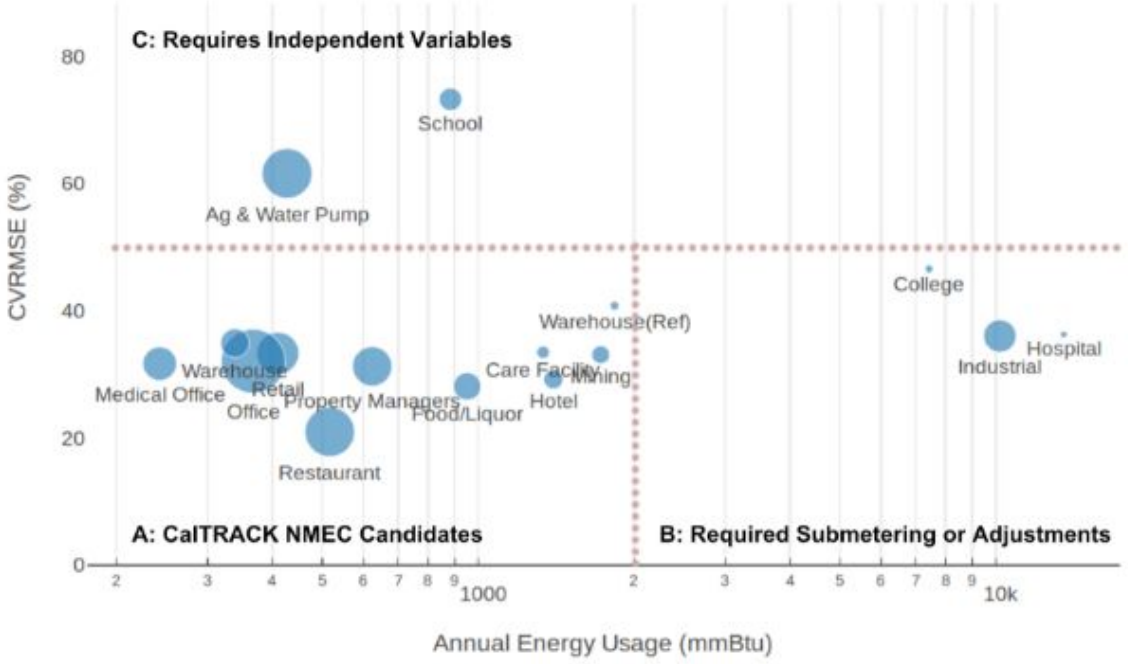
Optimization helps further the objectives of SB350 for energy efficiency, however, SB350 has multiple objectives for energy efficiency. There are four elements of SB350 for energy efficiency: establishing targets for doubling energy efficiency, enabling market transformation, quantifying energy efficiency based on normalized meter energy consumption, and using an existing conditions baseline as the default for claiming against goals. The process adopted has to consider the interrelation of these elements and their relative priority when they’re in conflict. Furthermore, SB350 makes a bold statement on goals setting for energy efficiency, calling for the Commission not to be bound by past modeling constraints.

> “In assessing the feasibility and cost-effectiveness of energy efficiency savings for the purposes of paragraph (1), the commission and the Public Utilities Commission shall consider the results of energy efficiency potential studies that are not restricted by previous levels of utility energy efficiency savings.”

We agree with staff recommendations to segregate the energy efficiency activities among those that are not procured by load serving entities (LSEs) and those that reasonably can be. This path can be informed by looking at what types of sector-building combinations may fit into aggregated procurement strategies based on modeling meter-based consumption.

In early 2018 the California Energy Commission, alongside OpenEE, conducted baseline comparison analysis to see how well various buildings could be modeled with straightforward billing analysis. The results showed that this model could be applied in a wide range of scenarios.[1] This type of analysis could help decide which energy efficiency activities could be tracked as candidate resources in the IRP. For these opportunities, consumption based analysis can be used to support planning and forecasting as inputs to the IRP optimization process.

Model Fit for Aggregate Billing Analysis - CalTRACK Week 8 Testing



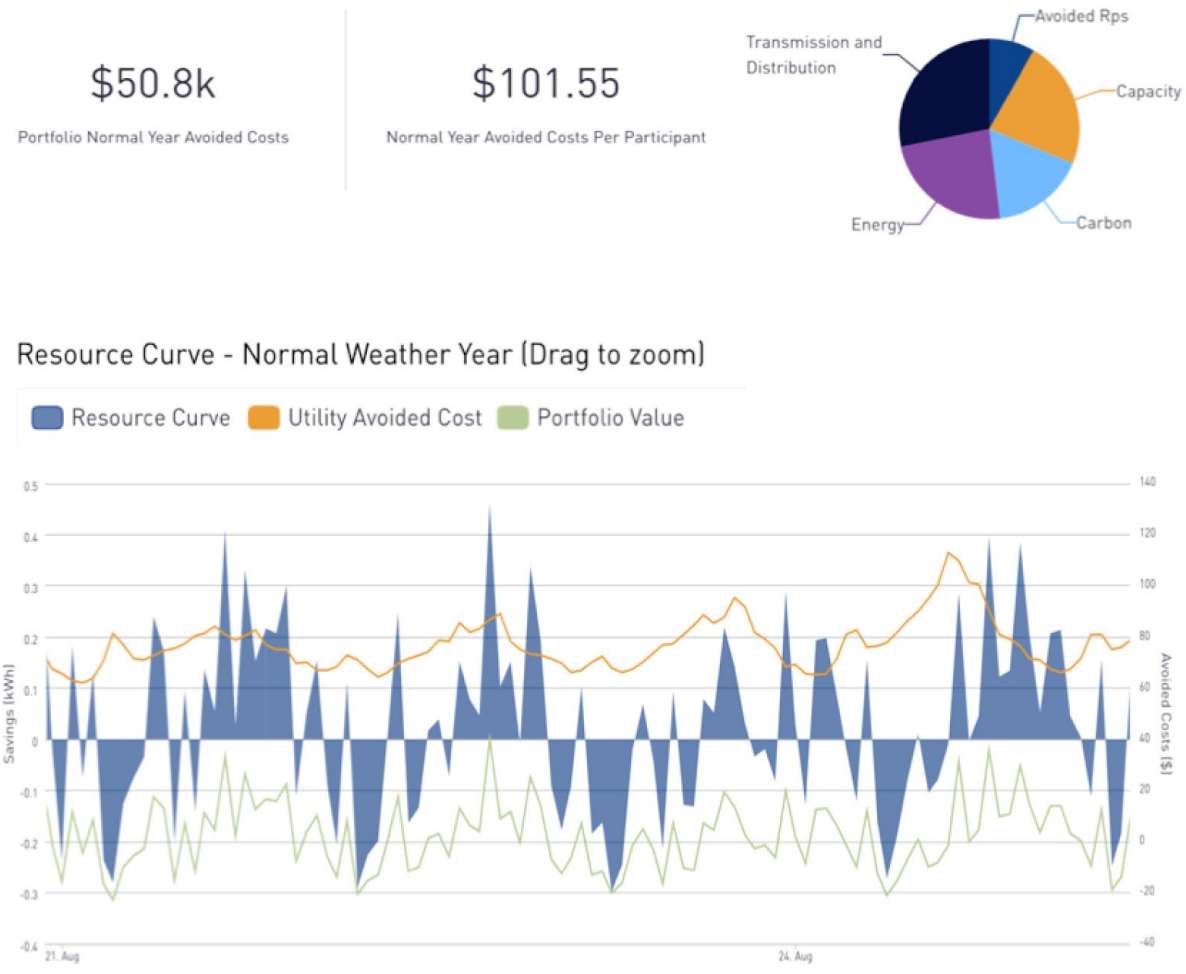
As noted in the staff paper and technical reports, supply curves are essential to this analysis. Naturally in the IRP, the optimization of energy efficiency should be focused on the value that efficiency can deliver for reducing carbon emissions cost effectively compared to alternatives. This value depends on the time and location specific delivery of energy efficiency to enable it to be treated and considered as a resource like any other. Viewing energy efficiency from the perspective of its supply curve value requires a transition in thinking, but with consistent quantification criteria, requirements for reporting, and alignment with value, the market can

[1] CalTRACK Week 8 Blog: Building Qualifications Test Reveals Wide Applicability of CalTRACK Method for Portfolio Analysis. http://www.caltrack.org/project-updates/week-eight-caltrack-update

adapt to deliver in this framework. With proper price signals for the grid value of savings, efficiency can be primarily acquired through competitive procurement mechanisms such as those emerging with IDER and tied to DRP to offset distribution needs. These mechanisms should be the first priority for resource acquisition to optimize the value to the grid, and the efficiency of capturing that value.

Leveraging standardized and tested approaches such as the CalTRACK methods, it is now possible to track the time and locational impact to demand of energy efficiency (and electrification) interventions in near real-time. This enable the valuation of avoided cost and carbon to be tracked longitudinally. The image below is an example of a portfolios resource curve (savings load shape) and the utility avoided cost, to calculate the actual avoided cost 8760 value of efficiency.

Resource Curve (savings load shape) from Energy Efficiency Interventions



Tracking resource acquisition programs through IRP optimization also supports the objective for energy efficiency in SB350 to use normalized metered energy consumption and existing conditions baseline as the default means of delivering energy efficiency. Consumption analysis

supports forecasting and also can track the pulse of naturally occuring rate of adoption. As interventions are undertaken the net impact to load shape can also be assessed with comparison groups of non-participants. This will support analysis and tracking for the interaction of aggressive code adoption, and can help avoid double counting of energy efficiency savings.

This practice is currently possible and gaining experience in the general energy efficiency portfolio. The PG&E pay for performance program, for example, procures energy efficiency through a competitive solicitation and pays for the kWh, therm and kW delivered, with a 3X kicker on the hourly kWh savings during constrained periods. BayREN and MCE also have plans underway to offer similar streamlined means of procuring energy efficiency. Each program will have the capability of understanding and building incentives for the time value of the savings.

The reporting regimes for these programs will offer a meter-based view of the energy and demand impacts by sector and building type for the whole participant population. Rather than sample uncertainties, as is typical in EM&V reports, programs will be able to report savings uncertainties for their portfolio to the Commission or to Load Serving Entities (if they are one or not). Supporting this streamlined deployment, clear transaction pathway and targeting for the time value of savings also brings a data rich environment for IRP optimization and using energy efficiency as a resource where possible.

Currently the goals and potential study are dependent upon measure-based average deemed savings and predefined fixed load shapes that create time constraints in updates and feedback loops for the goals and potential analysis. Single measure deemed-values cannot capture the range of interactive effects, variations when integrated interventions occur, and other external drivers of consumption. Similarly the TRC, as an output, will not provide the detail needed to understand the time variable value of a program, which must come from hourly analysis of the interventions and the building of an actuarial data set at the sector and building level.

Using meter-based consumption as the foundation of potential analysis and tracking, rather than measure-based savings, the net impact to load shape also can emerge as the guidepost of incrementality to ensure cost effective investments, relative to the marginal cost of other alternatives. If free riders, spillover, recession, and market transformation are all active, comparison groups will enable the parsing of the difference.

The adoption of a meter-based, actuarial model for efficiency will enable external infrastructure financing of the grid and carbon value of energy efficiency--in the same way we finance other grid infrastructure investments. Managing portfolios of energy efficiency resources are a key enabling factor for the future, as described in this article last year. Until this model can take shape, efficiency will be constrained to the rate-payer funded investments deployed through the energy efficiency portfolio.

How should differences between the current portfolio-based cost-effectiveness framework for energy efficiency and IRP measure-based cost-effectiveness be reconciled?

The IRP cost effectiveness framework, with a common valuation structure for all resources, should be the priority and should drive the cost effectiveness structures for the procurement of other resources. We agree with staff that the IRP analysis of creating a savings stream of resources with their own costs and benefits provides a better procurement signal than portfolio cost effectiveness. However, we don't believe that IRP cost effectiveness should be based on a measure-based bundling, but should instead be derived from an actuarial analysis of sector-building type consumption and past performance. Staff should use the IRP optimization process to inform the goal setting process, but needs to ensure that the valuation is properly aligned for the resources in the IRP.

The IRP optimization, however, should not be used identify measures or programs that will be of greatest value. This should be left to market actors, with proper procurement and price signals (as noted in the the staff paper). The valuation structure is essential, and price and potential benefits of early evening load reductions, as provided in the example, should be the focus of regulatory direction, not prescriptive programs and measures. Truing this information up with field performance, reported from program interventions (including measure combinations) would be an essential part of the feedback loop for future improvements and supported with performance contracts that will align incentives with market actors to capture that value, rather than administrative review of programs in need of continuation and discontinuation.

Portfolio-based cost effectiveness for energy efficiency should be further segregated into its component parts and considered on its merits. The mandate of the combined portfolio cost effectiveness can also be considered a floor, not a ceiling. If all cost effective energy efficiency is captured in the competitive procurement, there is no limit to pursuing additional energy efficiency to meet broader policy goals.

In other words, any portion of the current energy efficiency portfolio that can demonstrate its value (time and location) compared to the alternatives, is a good deal for ratepayers. With meter-based measurement requirements they can be "visible" to the system (with uncertainty metrics), and over time provide a more robust view of the incremental effect of additional investments above and beyond the naturally occuring improvements in efficiency or those that are captured through market transformation (because they're in the baseline comparison group).

With respect to the time horizons necessary to procure DERs, the logic in this section is largely driven by technology specific adoption. While it is true that it may take long lead times to get to market penetration of a technology specific program, these lead times can be mitigated with proper price signals in procurement settings and when tied to performance payments. Capturing savings compared to an existing conditions baseline and calibrated with a net comparison group also allows for alignment of the resources compared to the grid need. Staff's concern that "great care must be taken before making any significant changes to the current approaches for procuring DERs" is not unfounded, but a bit overstated. They are also correct in noting that greater emphasis should be put into developing mechanisms to bridge the resource

characteristics, but also bridge market experiences to deliver time value on a performance basis.

We agree with staff that IRP optimization does not violate statutory requirements to procure all cost effective energy efficiency; in fact it would be a prefered means of capturing all cost effective energy efficiency when aligned with the proper valuation and marginal cost comparison.

Staff proposes that a portfolio approach to energy efficiency cost-effectiveness is still necessary. Do you agree? What would be alternative approaches to assess and authorize energy efficiency investments?

No, we do not agree. We believe that the portfolio approach to cost-effectiveness can be abandoned. Balancing the investments is a false narrative at this point. Portfolio level cost effectiveness was fine in the days of trying to capture wholistic benefits across the board based on averages. It is not appropriate as we migrate to a clean grid and a more dynamic value proposition for energy efficiency. This is where a meter-based, buildings-as-the-asset, framework is essential.

When the Commission adopted cost effectiveness for the non-codes and standards, this allowed greater visibility to the cost effectiveness of the resource acquisition portions of the portfolio, instead of screening it behind the C&S. The same approach could be taken to extract the resource acquisition portions of the portfolio from the non-resource, judging them each on their own merits. Rather than using a total resource or a program administrator cost test, the marginal cost of the alternative should be the foundation of cost effectiveness for resource acquisition, even as other policy objectives could continue to use a societal cost test.

Local procurement processes would be the vehicle to identify competitive energy efficiency programs and projects, based on their marginal cost versus other alternatives. Based on the flow diagrams in the staff white paper, it is not clear how the system reference plan and the preferred resource plan sync with localized procurement decisions. We recommend a path to reconcile and put the local procurement opportunities in a priority position to capture energy efficiency.

Funding for codes and standards advocacy, statewide marketing, education and training, emerging technology, low income and disadvantaged communities and other non-resource priorities can be authorized and approved independently on the basis of their social benefit and support for the broader objectives--these are policy choices not resource acquisition. It is not a violation of PU code to capture all cost effective energy efficiency, because all cost effective energy efficiency should already be captured in the procurement process. Non-resource expenditures should augment those activities and pursue the broader policy goals that have been identified by the Commission and the State.

Which types of energy efficiency measures should be optimized in the IRP process? Which should not be optimized? Please explain the rationale behind your recommendations.

We should not be attempting to optimize measures in the IRP process. We should use a consumption framework (NMEC) to assess potential, and leave the measures, business models and financing structures to the market.

The technical potential can be based on historic interventions and naturally occuring consumption trends at the sector and building level. This will allow for a relative gauge of the possibility, but not be strictly limited to that potential through each technology (which cannot capture every eventuality of measure combinations). If more cost effective energy efficiency can be captured in the market, that would be encouraged through the competitive procurements. The value structure to deliver where the resource is needed and when it is needed can be built into this framework, and the onus is on those delivering services to meet these obligations.

Tracking and reporting impacts on a meter-basis will provide the actuarial datasets necessary to support the next forecast, creating a virtuous cycle to identify and capture the next tranche of energy efficiency potential.

What commission actions or decisions would be necessary to optimize efficiency in the IRP?

The Commission would need to segregate the current energy efficiency portfolio and allow the resource acquisition portions to be captured in resource procurements by the utilities and CCAs. To ensure a stream of data and information to update a sector-building consumption analysis, programs would need report load shapes to the commission in their quarterly or annual reports.

To ensure traceability and accountability, programs that can be assessed on a meter-basis (NMEC) should be, even if they were not part of pay for performance program structure. These programs would be more likely able to be treated as an ‘equal’ resource because a consistent stream of their time-value could inform the load forecasting efforts at the local and state level.

Current Business Plans include sector level plans for each program administrator. The resource acquisition portions of these plans could be developed in cooperation with the procurement departments of their respective load serving entity. For those program administrators that are not a load serving entity, coordination could still occur within their geographic territory and can be captured in the existing coordination agreements required by the Commission. Plans that emerge would reflect the Distributed Resource Plans or IDER procurements or the local resource plans. The shared goal would be optimizing procurement of energy efficiency based on local need, and tracking progress based on those interventions.

All existing non-resource activities, low income and disadvantaged community investments, and codes and standards could be funded through the current energy efficiency portfolio.These activities could potentially be justified with the cost effective savings of codes and standards advocacy or an alternative cost effectiveness structure could be the frame for continued investment. As the CPUC re-considers market transformation under SB350, these activities could also be supported in the statewide portfolio.

The Energy Savings Performance Incentive should also be reconsidered, as much of it is driven by measure-based uncertainties and updates. The performance based utility compensation could continue in the form of rate based energy efficiency investments into cash flows (aka infrastructure financing), and/or shared of savings such as those being implemented through the Reforming Energy Vision (REV) in New York.[2]

Technical

What modifications, if any, should be made to the measure bundling process? Please propose suggestions for further discussion.

The challenges of including a resource that "comes in many shapes and sizes" is well articulated in the staff white paper. Adopting a meter-based framework for goals and potential and tracking accomplishments for energy efficiency helps address this issue because the forecasting, goals, potential and tracking can be done at the sector-building level. Forecasting can be driven by projecting consumption patterns and expected savings based on past experience or policy goals. The potential for energy efficiency could be identified by historic, actuarial information on past performance and tracking naturally occuring improvements in efficiency.

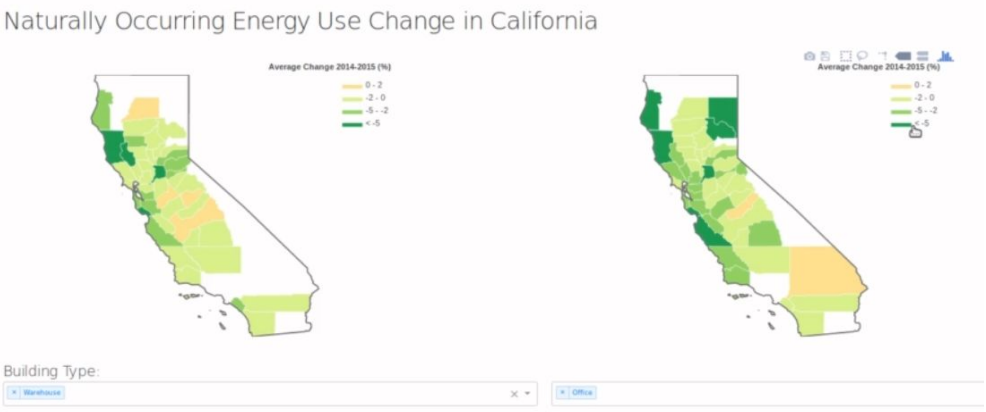
Navigant's bundling approach was appropriate for the task at hand. However, going forward the load shapes from buildings and program performance should be based on metered results. The sector-building load shapes can be derived from analysis of hourly consumption from the population and changes in shapes derived from interventions. This "meter-everything" approach can be the source of a stream of future data to update and inform the forecast as well as ensure that investments are aligned with and delivering value to the system.

We recognize that there are several details to work out in this alternative modeling approach, but given past experience conducting consumption analysis on roughly 50M meters in California, we believe it critical to use a consumption framework for capturing energy efficiency alongside other resources. As in the illustration below, with statewide consumption data, trends

[2] https://nyrevconnect.com/rev-briefings/track-two-rev-financial-mechanisms/

and savings potential can be identified by methods and means beyond bottom up technology inventory to capture sector, building and geographic components of resource need.

Sector-Building Consumption Change Analysis - Non-Participants



Which value streams for energy efficiency have been accurately represented in the RESOLVE model? Which have not been accurately represented?

Based on preliminary understanding of the Navigant technical report and minimal comprehension of the RESOLVE model at this time, the primary concern is the use of the cost and benefits streams of the Total Resource Cost test at the measure level as the basis of the analysis. As noted by staff, the alignment of costs amongst resources is essential to comparability, and the inclusion of avoided T&D is important.

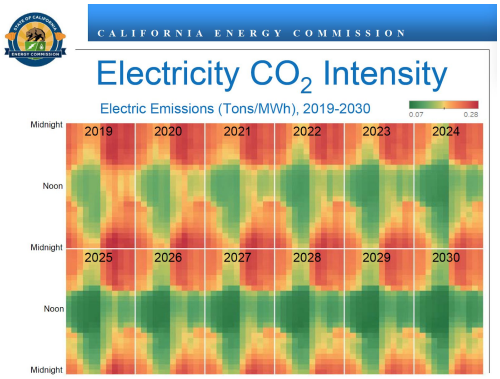
Generally the costs and benefit streams in the TRC may have been appropriate for portfolio-level decision making, but it is not the appropriate metric for procurement optimization. It is even more problematic when applied to the total cost of customer level energy efficiency investments, where energy savings is only one of the benefits that is driving customer investment. A consistent, levelized cost model that allows for comparison across resources should be the focus. A study of Clean Energy Portfolio optimization conducted by RMI earlier this year offers high level considerations of how clean resources can be consistently compared.[3]

Collecting and analyzing data on the time value of efficiency from programs and interventions that are currently planned should be part of the research strategy to improve valuation and support the technical modeling and data questions that staff has cited as needing further investigation. Avoided costs are tied to the measures in this analysis but they can also be reported and analyzed as part of the embedded measurement and reporting from the programs. This is possible now, and should be required as part of the new third party program requirements, as it illuminates the grid value energy efficiency is currently is providing (and not)

[3] https://rmi.org/insight/the-economics-of-clean-energy-portfolios/

and must be part of the prioritization discussion around carbon and updates to the modeling and IRP optimization process.

Using time and locational models is also critical for achieving the States decarbonization goals. Carbon differs by hour and location on the grid. When calculating carbon based on the marginal intensity of electrons often reveals a very different and more accurate answer than measuring monthly savings against monthly averages. If we intend to reduce carbon intensity we must measure it correctly in the first place.



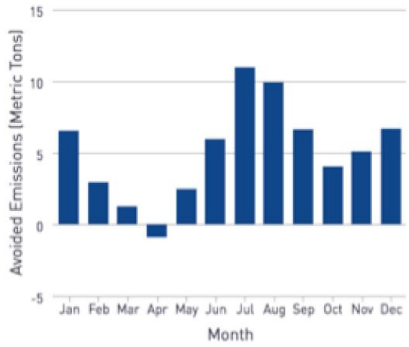
These methods and the data to derive the actual avoided carbon on an hourly basis exists today and we can use them to inform the forecast as well as planning for and tracking efficiency impacts.

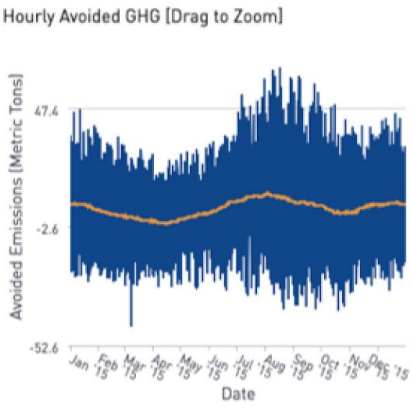
Avoided Carbon / GHG Reporting for Programs and Portfolios

45	0.207	0.09	436
Portfolio Avoided GHG Emissions [Metric Tons]	Avoided Emissions Factor [Metric Tons/MWh Saved]	Participant Avoided GHG Emissions [Metric Tons]	Participant Normal Year kWh Savings

Avoided Electric GHG Emissions (Kilograms Carbon)

HOUR	1	2	3	4	5	6	7	8	9	10	11	12
1	14.1	8.3	-1.4	-6.4	1.0	8.8	14.6	10.1	0.4	2.8	1.2	5.3
2	4.2	7.5	-1.5	-5.1	1.8	5.8	11.1	6.9	-9.1	-3.3	4.2	9.9
3	5.5	4.8	2.3	-3.6	-0.4	0.6	4.1	2.9	-3.0	-2.8	5.5	2.5
4	8.0	6.8	0.9	-0.8	-3.6	2.5	1.9	3.3	-3.1	-3.9	0.2	6.6
5	8.0	8.7	1.2	-0.8	-0.6	1.8	0.2	3.3	2.8	-0.9	1.8	8.4
6	3.8	1.0	2.9	-4.1	0.7	0.9	-1.6	-6.9	-0.1	0.5	3.5	3.5
7	3.3	1.8	-0.2	2.1	0.6	0.0	2.7	-2.8	-4.9	-0.4	5.2	3.7
8	5.5	4.1	3.0	2.5	1.8	2.5	1.1	-3.3	3.8	-0.6	2.0	6.9
9	10.7	5.2	3.1	1.6	3.9	1.8	-0.7	-1.3	0.8	7.4	4.5	7.4
10	10.9	3.6	5.3	3.6	-0.2	0.9	3.5	10.2	9.7	8.6	13.3	9.7
11	8.5	0.0	2.2	-1.7	1.0	-0.4	-1.9	-3.6	0.6	1.4	1.5	9.1
12	3.6	0.2	1.3	0.2	-3.2	-1.5	0.2	-3.3	-2.6	2.7	2.7	5.0
13	2.7	-1.9	-2.8	-4.2	-1.1	-1.4	1.6	0.8	-2.9	-3.5	-1.0	-2.8
14	-0.3	-2.3	-3.1	-3.2	0.4	2.4	4.9	0.3	-0.7	-2.9	-2.8	1.1
15	0.0	-0.6	-3.1	-1.6	3.1	3.5	2.9	3.6	-1.9	-0.6	0.4	2.7
16	1.4	-6.0	-4.6	-3.9	2.7	4.6	12.6	9.0	3.3	-0.6	0.2	3.6
17	3.6	-4.1	-4.4	-4.5	1.3	7.3	16.4	19.9	9.8	8.7	8.1	10.9
18	4.4	3.2	1.7	0.0	2.7	12.5	17.5	20.6	18.4	13.6	6.6	9.5
19	2.2	4.2	3.0	1.9	7.3	13.6	25.8	29.2	26.1	19.8	11.3	11.1
20	11.0	3.7	2.3	4.6	9.2	22.5	26.3	27.1	22.3	12.6	8.9	7.3
21	9.2	9.0	4.0	1.2	7.5	15.2	30.4	26.1	26.8	11.7	18.3	6.3
22	15.0	6.0	7.5	1.4	10.2	17.3	31.8	31.6	21.4	14.1	7.8	10.1
23	8.6	2.2	6.9	0.4	8.1	14.3	30.1	36.4	26.2	9.2	14.2	15.2
24	13.2	5.1	3.6	-1.7	4.9	7.8	27.7	18.0	15.2	3.6	4.9	7.4





Process

Do you agree with the staff proposed modifications to the energy efficiency Rolling Portfolio Schedule? Please provide alternatives if possible.

The staff proposed modifications to the Rolling Portfolio Schedule are reasonable given the current infrastructure that is being maintained. If analysis is simplified around a consumption-based modeling framework, and consumption and performance data from field implementation can augment and support forecasting with actuarial data sets, even greater flow could likely be achieved.

Missing from the discussion is the role of program administrators' monthly, quarterly and annual reporting of savings claims. This is a primary data source for understanding portfolio progress. While the evaluation, DEER update and work paper bus stops are an important point of truing up estimates, they have represented an increasingly smaller portion of the portfolio as prioritization around uncertainties has focused them on high value targets for updates rather than comprehensive portfolio review.

EM&V results were cited as the "main bottleneck" in the timeline. If the Commission leverages prior direction and requires embedded measurement and verification, meter-based performance and aggregated savings claims (with time valuation and uncertainty metrics) have the potential of providing a reliable stream of data to the Commission. The CEC intends to curate statewide consumption data and together these data streams constitute an essential part of the forecasting and modeling activities and should built into the schedule and expectations for reporting.

We encourage the Commission to prioritize procurement pathways for energy efficiency as reflected in the IRP optimization process and schedules and the IDER and DRP activities. The historic existing energy efficiency rolling portfolio schedules were designed to drive portfolio cost-effectiveness decision making, not IRP optimization, and as such should be adapted to accommodate these new needs.

Do you agree with the staff proposal for integrating the energy efficiency goals development adoption and IRP two-year process? Please provide alternatives if possible.

Yes these two should be integrated, and the IRP data needs and timelines should be the priority. The goals development and adoption should be sensitive to that process, but parallel analysis should start now to enable transition to a normalized metered energy consumption framework for the utility reporting, goals and potential analysis and the IRP optimization process.

In closing, we'd like to emphasize the possibilities of thinking outside the box with a message from Ohio as they adopt their PowerForward grid reform described in this short article in Greentech Media last week.

> *"We're not trying to shove any particular product or service down anybody's throats in the state of Ohio," [Chairman of Ohio Public Utilities Commission] Haque said. "We're trying to create the type of marketplace that allows for innovation to organically arise and be delivered to customers if customers choose it."*

Perhaps unlike Ohio, California has a grand history of meeting energy efficiency challenges. Let our historic systems not cloud our future opportunities to leverage the power of markets and innovation to meet new challenges ahead.