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More Than Smart Comments on EPIC Plan for 2018-20

Additional submitted attachment is included below.



February 10, 2017

California Energy Commission
Dockets Office, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Re: Docket No. 17-EPIC-01 - Development of the California Energy Commission Electric Program Investment Charge (EPIC) 2018 – 2020 Triennial Investment Plan

To Whom It May Concern:

Thank you for the opportunity to submit recommendations for new initiative descriptions to be included in the 2018-2020 EPIC program. More Than Smart (MTS) is a nonprofit organization based in California with the mission *“To proactively support cleaner, more reliable, and more affordable power service through the integration of distributed energy resources into electricity grids.”* MTS’s comments are most relevant under the CEC Strategic Interest defined as *“Develop Tools and Analysis to Inform Energy Policy and Planning Decisions”*, but, if done appropriately, could apply to all 7 other categories outlined.

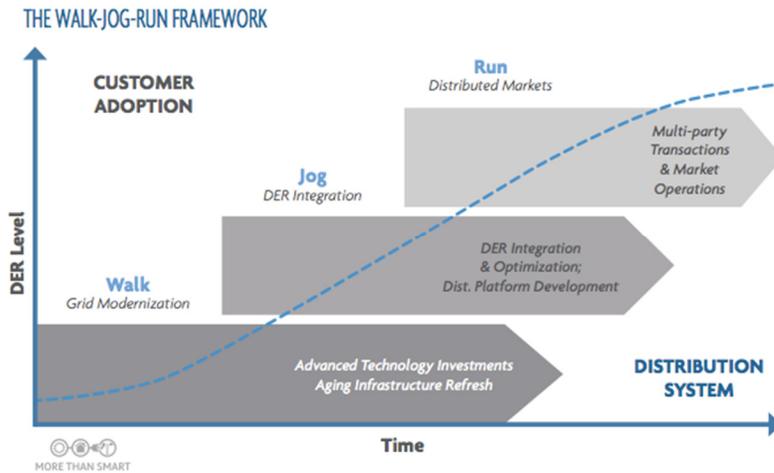
Before defining the specific directive around planning and policy, it is important to explain MTS is actively managing several working groups under the California Public Utilities Commission (CPUC) Distribution Resource Plan proceeding (www.drpg.org) related to Integrated Capacity Analysis (ICA) and the Locational Net Benefit Analysis (LNBA). In addition, MTS is managing similar work with the California Independent System Operator to clarify operational requirements at the Transmission to Distribution interface in California; working with the US Department of Energy defining the outline for an electricity distribution system platform of the future (DSPx) that could be used in any state (<http://doe-dsp.org>); and is actively working with the State of Hawaii’s Public Utility Commission to determine the current and future distribution system planning needs of their existing distribution system.

Part 1. Initiative Description and Purpose:

1. Please provide a brief description of the proposed initiative:

MTS is proposing the CEC develop a state grid modernization research initiative. This initiative would analyze the research needs to support California’s approach to three rapidly evolving functions: grid planning, grid operations, and DER integration.

The initiative would build on MTS’s “Walk/Jog/Run Framework” and the Department of Energy’s Modern Distribution Grid (DSPx) initiative. The Figure below outlines the planning, operation and market development needs that will need to be developed as California evolves its grid capabilities to better accommodate increasing levels of DER.



The Walk/Jog/Run Framework provides policy makers and stakeholders a path from low-DER penetration and relatively centralized, traditional grid operations to high-DER and advanced grid operations. That path has been further detailed through the work of DOE’s DSPx initiative, wherein specific methodological and technological developments needed to move down the path have been identified in further detail. Specifically, a forthcoming publication from this initiation, Volume 2, assesses the maturity of and deployment status of these critical methods and technologies. Synthesized, the Walk/Jog/Run roadmap and the DSPx analysis of technologies provide a roadmap and an assessment of the methodological and technological tools that can be used to advance down that path.

What is missing to date is a strategic assessment of how to advance those methodologies and technologies in the context of the purpose they service. Therefore we propose an initiative that leverages the tools produced by MTS and partners and adds to them in three ways. First, a comprehensive literature review of research being performed under past and present EPIC authority is needed. The scope of this review should include work being performed under EPIC authority, at the direction of the CPUC, and by the various engaged national labs. The literature review would map that research over the combined Walk/Jog/Run – DSPx framework.

Second, the initiative would perform a gaps analysis comparing the various research assessed through the literature review with the advanced needs of grid modernization. Critically, this analysis would go beyond today’s challenges and consider what is needed 3-5 years from now to realize progress in grid modernization.

Third, leveraging the first two parts of the initiative, a database of past, present, and potential future research related to grid modernization should be developed and maintained. The database should be a public resource available to support public and private decision-making about where to target research resources.

Cutting across each part of this initiative should be an active and ongoing stakeholder engagement process, a Practical Grid Research Engagement (PGRE). Because the nature of the needs and opportunities is dynamic and evolving, the Initiative should anticipate sustained, regular stakeholder engagement. Through PGRE parts 1 through 3, this initiative would reflect up to date and



comprehensive perspective from critical contributors. PGRE would be structured to facilitate communications not only between funders and recipients of funding, but between researchers as well. This matrix style communication could create a virtuous cycle of communications between critical stakeholders, allowing for more granular and timely sharing of perspective and coordination of our finite resources. In addition, specific methodological tools could be developed in coordination with this engagement effort.

To illustrate this initiative, consider the case of the Locational Net Benefit Analysis (LNBA) and Integrated Capacity Analysis (ICA). The LNBA provides a heat map of potential optimal feeder level locations for deploying DERs to defer planned utility projects. The ICA provides guidance to DER developers and aggregators on where the system has capacity to absorb them down to the circuit level. These tools serve to move California down its path toward grid modernization from walk to jog by enabling integration of DER into utility planning processes. They have been developed by California's investor owned utilities under demonstrations ordered by the CPUC with advisory oversight from a working group facilitated by MTS.

Under the initiative proposed here, the status of the LNBA and ICA research initiatives would be captured through a literature review, comparable to the other related research initiatives such as 2015-2017 EPIC projects, and considered in the context of what they need to accomplish to move not just from walk-to-jog, but also from jog-to-run. Their character and status relative to dozens of other related methods and technologies being considered by the DOE in the DSPx context would be analyzed and discernable. And the steps forward, sideways, and backward (as is inevitable at the "grid edge") would be shared across critical stakeholders through the PGRE. Similar examples can be imagined for many of the technologies and methods captured within the Walk/Jog/Run-DSPx framework. Whereas now, connecting the dots between many of critical efforts is often a matter of chance, under this initiative those connections would be a purpose fulfilled.

2. What technical and/or market barriers would the proposed initiative help overcome? For scientific analysis and tools, what knowledge gaps would the proposed initiative help fill?

Electricity distribution system planning has typically been done by IOU's without significant input from state regulatory and planning agencies. Now, with DER loads increasing and much of this happening behind the meter, better coordination is needed with DER providers, local planning agencies and new load providers to ensure we optimize spending and planning for our future electricity grid. The main market barrier here is simply the disaggregated nature of distribution system planning and research and the need for more coordinated efforts that could lead to more effective ratepayer spending, increased effectiveness in enabling DER services and a more rapid increase in reaching the state's GHG reduction goals.

Part 2. Benefits and Impacts

3. If this initiative is successful, either fully or partially, what would be the expected impact? Who are the primary users and/or beneficiaries?

The key ultimate beneficiary from improved coordination on grid modernization planning and research will be California electricity ratepayers. Now, the lack of transparency and coordination on grid planning research and tools leads to less than optimal resource decisions. Improvements to



coordination and planning methodologies and research will ensure a dollar spent on grid modernization will result in more cost-effective spending.

4. Describe what quantitative or qualitative metrics or indicators would be used to evaluate the impacts of the proposed initiative:

Possible metrics for evaluating the California Grid Modernization Planning Initiative include:

- **Coordination**
 - o # of IOU's, DER, government, publicly owned utility, and state agency participants
 - o # of proceedings using Initiative to merge/link to directives or actions
 - o # of working groups/proceeding meetings reduced or eliminated due to Initiative
 - o # of federal grid modernization programs directly linking their funding to PGRE research
- **Tools/Methodologies**
 - o A database of past, present, and potential future research related to grid modernization
 - o # of proceedings using the ICA and LNBA methodologies
 - o Dollars spent from EPIC funds on technical analysis in addition to IOU spending

5. Please provide a list of peer-reviewed references that support the responses for questions 3 and 4. Proposed initiatives that include peer-reviewed references will be given stronger consideration.

- *Distribution Systems in a High DER Future: Planning, Market Design, Operation and Oversight* - October 2015, Paul De Martini (California Institute of Technology) and Lorenzo Kristov (CAISO)
https://emp.lbl.gov/sites/all/files/FEUR_2%20distribution%20systems%2020151023_1.pdf
- *Next Generation Distribution System Grid (DSPx) – U.S. Department of Energy, 2017:*
http://doe-dspx.org/wp-content/uploads/2017/02/Modern-Distribution-Grid_Volume-I_01312017-1.pdf

6. (For technologies only) What competitive advantages does the proposed technology solution have over current benchmark technologies? If the technology is beyond the prototype stage, what strategies do you suggest to bring to scale?

Not applicable.

Part 3. Connection to Energy Commission's EPIC Framework

Energy Commission staff have developed a draft strategic framework to guide the CEC's planning and implementation of EPIC across triennial investment cycles. One of the objectives of the draft strategic framework is to communicate a consistent set of priorities for organizing current and future EPIC investments.

7. Please indicate which of the following strategic framework themes you feel the proposed initiative best fits within:

- Advance Technology Solutions for Deep Energy Savings in Building and Facilities
- Accelerate Widespread Customer Adoption of Distributed Energy Resources
- Increase System Flexibility from Low-Carbon Resources
- Increase the Cost-Competiveness of Renewable Generation
- Create a Statewide Ecosystem for Incubating New Energy Innovations



- Maximize Synergies in the Water-Energy-Food Nexus
- **Develop Tools and Analysis to Inform Energy Policy and Planning Decisions**
- Catalyze Clean Energy Investments in California's Underrepresented and Disadvantaged Communities

We thank you for the opportunity to provide input to the proposed 2018-2020 EPIC program. If you have any further questions, please call me at (916) 718-8292 or email me at tbrunello@morethansmart.org

Sincerely,

A handwritten signature in blue ink that reads 'Tony Brunello'. The signature is fluid and cursive, with the first name 'Tony' and the last name 'Brunello' clearly legible.

Tony Brunello
President
More Than Smart