Prioritizing ETs for Market Transformation:
A Look Behind the Curtain
(concurrent session)

April 4, 2017

ACEEE/CEE National Symposium on Market Transformation
Arlington, VA

Playbill

ACT 1

Drivers and ET Program Current

ACT 2

Market Transformation and ET's Role

ACT 3

Integrated Priorities and The Future for Statewide ET
Program Administration

FINAL ACT

Long-Term Innovation Support and Outreach

Energy for What's Ahead℠

ACT 1
Drivers and ET Program Current Focus

Drivers and Policies

- AB 32 and SB32 – 2050 GHG reduction targets

- California Long Term Energy Efficiency Strategic Plan
  - ZNE goals

- AB 758 & the California Energy Commission's (CEC)
  - Existing Buildings EE Action Plan

- AB 793
  - Promoting Access to Energy Management Technologies

- SB 350
  - Double the EE savings in electricity and natural gas by 2030
  - Increase the Renewable Portfolio Standard (RPS) to 50% by 2030

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- AB 802
  - Count "to-code" savings for goals and incentives
  - Pay for performance – leverage metered energy consumption
  - Include operational, behavioral, and retrocommissioning savings
  - Increase transportation electrification

- Rolling portfolio and Business Plan Development

SCE's Guiding Principles

- Promoting customer choice and customer engagement are key objective
- The distribution grid can play a key role in reducing carbon in California
- Safety, reliability and resilience must remain paramount objectives
- Cost of electric service must remain affordable and equitably-apportioned to customers
- Competitive processes for the selection of DSM should be utilized to the greatest extent possible

ACT 2
Market Transformation
and ET's Role

Market Transformation

- Intro MT definition
  - "long-lasting, sustainable changes in the structure or functioning of a market achieved by reducing barriers to the adoption of energy efficiency measures." – D. 09-09-047, p. 89.
- Key differences from existing resource acquisition programs:
  - Difficult to achieve and expensive
  - Incentives, if any, must be ramped down
  - Relies on multiple market actors, not just IOUs

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Differences Resource acquisition and market transformation programs

|	Resource Acquisition	Market Transformation
Scale	Program	Entire defined market
Target	Participants	All consumers
Goal	Near-term savings	Structural changes in the market leading to long term savings
Approach	Save energy through customer participation	Save energy through mobilizing the market
Scope of Effort	Usually from a single program	Results from effects of multiple programs or interventions
Amount of Program Administrator's control	PAs can control the pace, scale, geographic location, and can identify participants in general	Markets are very dynamic, and the PAs are only one set of actors. If, how, where, and when the impacts occur are usually beyond the control of the program administrators.
What is tracked, measured, and evaluated	Energy use and savings, participants, and free-ridership	Interim and long term indicators of market penetration and structural changes, attribution to the program, and cumulative energy impacts.
Timeframe for cost-effectiveness	Usually based on 1st year or cycle savings	Is usually planned over a 5 -10 year timeframe

(Keating & Prahl, 2014)

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ETP Supports Market Transformation Program Development (MTPD)

MT Program Development	ETP Support to Program Developers
1.Selecting potential target markets	•Conducting early technology introduction projects
2.Characterizing the market	•Developing baselines •Identifying market characteristics through primary and secondary research projects
3.Strategic design of the initiative	•Pilot testing market interventions •Pilot testing through scaled field placements and customer site demonstrations •Identifying training needed by vendors
4.Role of advisory groups	•Consulting ETCC Advisory Council on MT program development •Identifying common regional issues and leverage points
5. Prepare an evaluation strategy	•Tracking market indicators against baselines

Technology Influence and Adoption Life Cycle – Conceptual
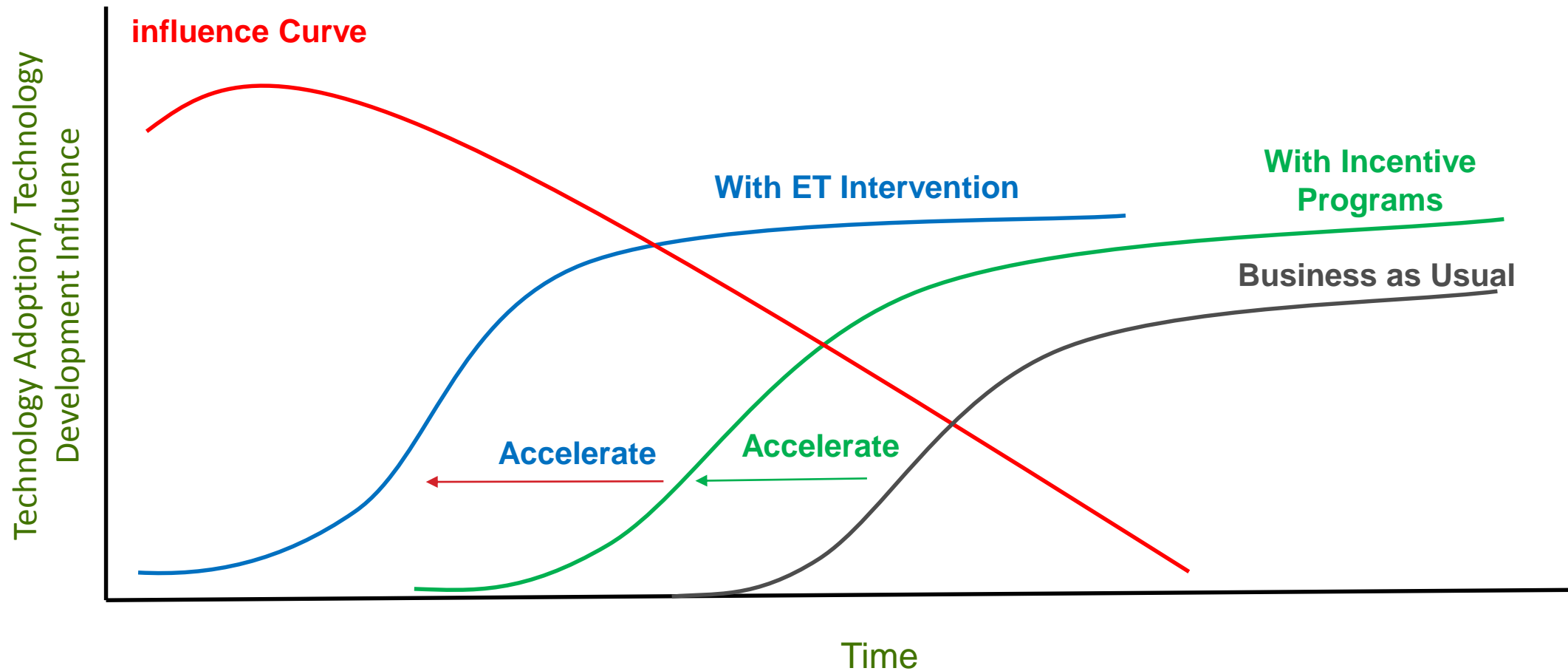
Emerging Technologies Program

<u>Purpose</u>: ETP supports increased energy efficiency market demand and technology supply by contributing to the development, assessment, and introduction of new and under-utilized EE measures. (i.e., technologies, practices, and tools).

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ACT 3
Integrated Priorities and The Future for Statewide
ET Program Administration

ETP Support for Integrated Priorities

Support Long Term Energy Efficiency Strategic Plan Goals

- Zero Net Energy
- Deep Retrofits
- HVAC Market Transformation
- Lighting Market Transformation

Support For Integrated Solutions

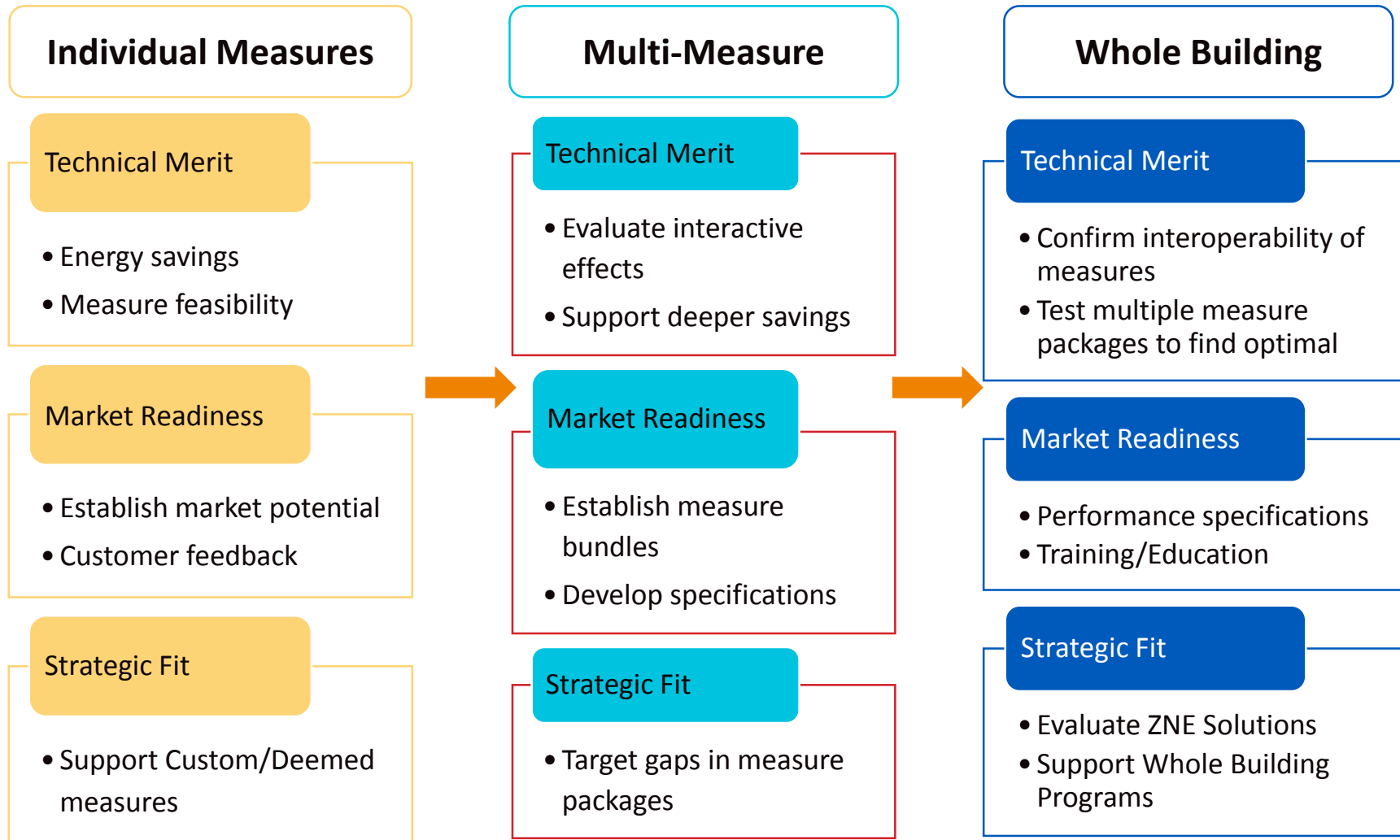- Technical Feasibility
- Occupant Impacts
- Whole Building

Support for Efficiency Measures

- Deemed Measures
- Custom Measures
- Code Readiness

Continued Tactical Support

Individual Measures

Technical Merit

- Energy savings
- Measure feasibility

Market Readiness

- Establish market potential
- Customer feedback

Strategic Fit

- Support Custom/Deemed measures

Multi-Measure

Technical Merit

- Evaluate interactive effects
- Support deeper savings

Market Readiness

- Establish measure bundles
- Develop specifications

Strategic Fit

- Target gaps in measure packages

Whole Building

Technical Merit

- Confirm interoperability of measures
- Test multiple measure packages to find optimal

Market Readiness

- Performance specifications
- Training/Education

Strategic Fit

- Evaluate ZNE Solutions
- Support Whole Building Programs

ET Business Plan Proposal - Key Features

- Business Plans files by IOUs in January 2017
- Transition to two ET statewide administrators:
  - Electric – Southern California Edison
  - Gas: Southern California Gas Company
- Statewide program to be directed through Technology Priority Maps (TPMs)
  - Planning function
- SW Program Constraints
  - Implementers to "design and implement" the program leveraging TPMs
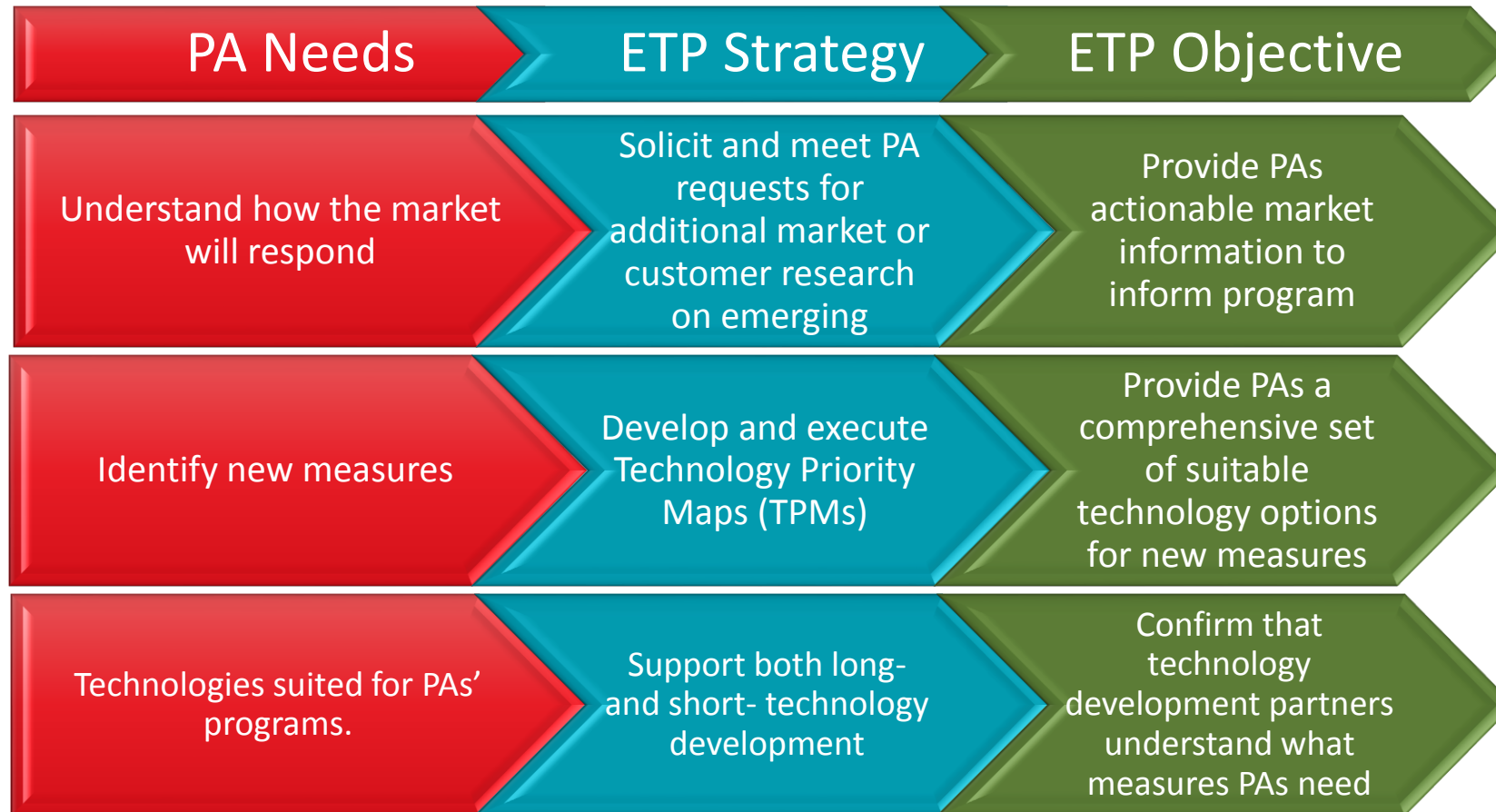- No more sub-program boundaries
  - focus on objectives

ETP Core Activities

- Continue leveraging current program core competencies
  - Assessment and validation of technologies and solutions
  - Demonstrations and showcases of potential new solutions
  - Other

Technology Priority Maps

- Purpose
  - Ensure "high priority" areas are identified addressed

  - Avoid duplication of research across IOU PAs
    - ETCC coordination supports coordination across state

ET Business Plan Proposal

PA Needs	ETP Strategy	ETP Objective
Understand how the market will respond	Solicit and meet PA requests for additional market or customer research on emerging	Provide PAs actionable market information to inform program
Identify new measures	Develop and execute Technology Priority Maps (TPMs)	Provide PAs a comprehensive set of suitable technology options for new measures
Technologies suited for PAs' programs.	Support both long- and short- technology development	Confirm that technology development partners understand what measures PAs need

FINAL ACT
Long-Term Innovation Support and Program Outreach

California's Electric Program Investment Charge (EPIC)

- EPIC is funded by an electricity ratepayer surcharge established by the California Public Utilities Commission (CPUC) in 2011.
- Annual program funds total $162 million per year with 80% administered by the California Energy Commission and 20% the 3 CA IOUs

- EPIC's Purpose
  - Benefit the ratepayers of the three largest electric investor-owned utilities,
  - Fund clean energy technology projects that promote greater electricity reliability, lower costs, and increased safety.
  - Encourage technological advancement and breakthroughs to achieve state's statutory energy goals.

California's Cleantech Ecosystem

- EPIC Funded a Grant Program and 4 Regional Energy Innovation Clusters (REICs) for 5 years
- The California Sustainable Energy Entrepreneur Development Initiative (CalSEED) provides grant funding to innovators in two tranches
  - Concept Awards of up to $150,000
  - Prototype Awards of up to $450,000 – Based on performance in a business plan competition
- REICs assist entrepreneurs and researchers as they conceptualize and develop innovative new solutions, by:
  - Providing key services, infrastructure, expertise, and resources.
  - Accelerating the commercialization of promising technical innovations.
  - Catalyzing effective regional planning, collaboration, and coordination around energy innovation that will benefit IOU electric ratepayers.
  - Connecting emerging energy technologies to region-specific needs, opportunities, and assets.
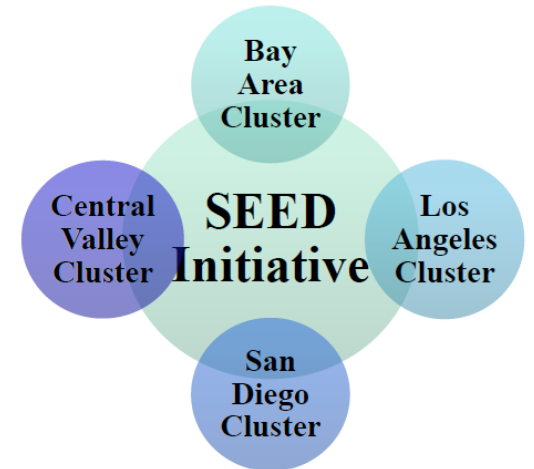
Rocket Fund

- Small grant program, established in 2015 through a partnership of the Emerging Technologies Coordinating Council (ETCC), Caltech's FLOW entrepreneurial program and the Moxie Foundation, (a private foundation fostering innovation and entrepreneurship).

- FLOW created the Rocket Fund from lessons learned working with close to 1,000 entrepreneurs and with ETCC program experts.

- The goal is to help very early stage (VES) cleantech companies (post technology development but pre-pilot stage) build a Minimum Commercial Product (MCP) while working with future customers.

- Operating as a pilot the Fund made four awards in early 2015 (see http://resnick.caltech.edu/n_rocket.php) and five in early 2016.

- The core program is based on the concept that for VES cleantech companies, small but smart grants, coupled with direct assistance by potential customers, will accelerate products to market faster and more reliably.

- "De-risking" the technology renders early stage companies more attractive to potential customers, investors and partners.

ET Dissemination Efforts

Emerging Technologies Coordinating Council (ETCC) - WWW.ETCC-CA.COM

ET Summit : April 19-21, 2017

Emerging Technologies Summit

MAKING THE CONNECTION:
From Energy Efficiency Innovation to Delivery

Ontario Convention Center, Ontario, California
April 19-21, 2017
www.etsummit.com

ET Summit : April 19-21, 2017

- Rory McDonald, Ph.D.
- Keynote Speaker, Harvard Business School

- Ellen D. Williams
- Plenary Speaker, University of Maryland & former ARPA-E

- Commissioner Carla Peterman
- Opening Session Speaker, CPUC

- Ralph Cavanagh
- Opening Session Speaker, National Resource Defense Council

- Laurie ten Hope
- Opening Session Speaker, California Energy Commission

Upcoming ETCC Events

Date	Event	Location & Host
April 19-21, 2017	Emerging Technologies Summit	Ontario Convention Center, Ontario, California
September 20, 2017	Q3 Meeting: Industrial	Bay Area, PG&E
December 6, 2017	Q4 Meeting: Residential	San Diego, SDG&E

To sign up for the ETCC Insight newsletter, check the box on the sign-in / registration sheet or sign up online at: www.etcc-ca.com/subscribe

Check the ETCC website for updates: http://www.etcc-ca.com/events

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Thank you!

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