

Program will start at 10:00 am



ETCC QUARTERLY MEETING: *COMMERCIAL BUILDINGS OF TOMORROW*

February 17, 2014

SCE Energy Education Center, Irwindale, CA
HOSTED BY: Southern California Edison

WELCOME!!



Before we get started....
housekeeping and
safety

FOR OUR ONLINE MEETING PARTICIPANTS

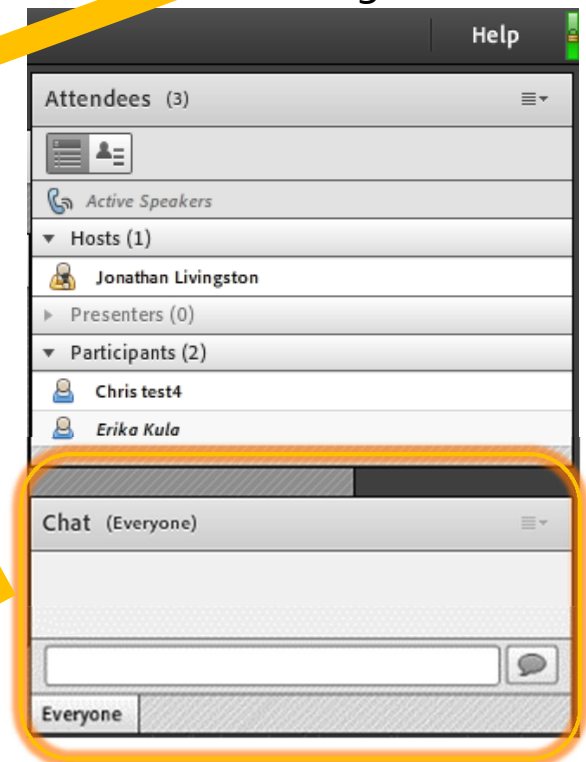
- Quick logistics

- Phone lines are muted, so if no sound is coming from your speakers, click here
- Speaker check: select “raise” hand in the control panel to confirm you are able to hear
- Please use question field to ask questions during Q&A or if any technical issues

Left Corner



Right Corner



HOUSEKEEPING FOR ALL PARTICIPANTS

- Please turn off or silence your phone, and step outside for any non-program conversations
- Slides will be posted to www.etcc-ca.com
- Don't forget to fill out evaluations!

SAFETY MESSAGE

- In the event of an emergency:
 - Earthquake
 - Fire
 - Other evacuation
- Meeting point
- 911
- CPR

TODAY'S AGENDA

10:00 AM Welcome, Safety and ETCC
Updates

10:15 AM **State of Affairs**

11:30 AM LUNCH (*provided*)

12:15 PM **Partnering for Impact**

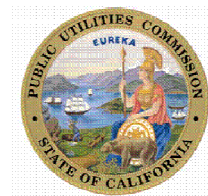
1:30 PM **Adopting the Innovation**

3:00 PM Wrap Up

EMERGING TECHNOLOGIES COORDINATING COUNCIL (ETCC)

The ETCC supports the advancement of energy efficiency and demand response initiatives through its leadership, impact and influence in the emerging technology domain. It pursues this objective through strategic stakeholder engagement and effective and efficient coordination among ETCC members.

Members include:



EMERGING TECHNOLOGIES PROGRAM MISSION

“...to increase energy efficiency market demand and technology supply through evaluation of *emerging* and *underutilized* advanced technologies to increase customer savings...”

Emerging
Technologies

Programs

Codes
and
Standards

Zero Net Energy



LED Lighting



EE Rebates



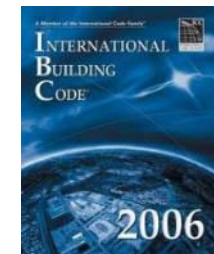
Retail and
Manufacturer
Strategy



Appliance
Standards



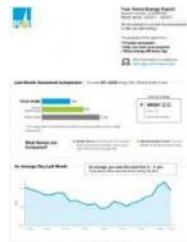
Building Codes



HVAC



Home Energy
Report



Contractor
Training and
outreach

ET PROGRAM DESIGN

Technology Development Support

- Provide resources to transform early-stage technologies / concepts into saleable products
- Develop forward-looking product specifications
- Provide outreach to early-stage entrepreneurs, investors, and analysts (TRIO)

Technology Assessment

- Evaluate performance claims
- Generate energy savings and cost data required for regulatory approval of a new EE measures

Technology Introduction Support

- Conduct scaled field placements to foster market traction
- Build demonstration showcases to create visibility / market awareness
- Conduct third-party solicitations using competitive bidding (TRIP solicitation)

October 20 - 22, 2014
Wyndham Parc 55 Hotel
Downtown San Francisco

Next ET Summit:
Spring 2016 in Los Angeles



Emerging Technologies Summit

ACCELERATING INNOVATION IN ENERGY EFFICIENCY

If you missed it, you can view the
presentations at...

<http://www.etcc-ca.com/summits/2014>



STATE OF AFFAIRS

Michelle Thomas, DSM Strategy and Policy Manager | Southern California Edison *MODERATOR*

Dave Ashuckian, Deputy Director, Efficiency Division | California Energy Commission

David Jacot, Director, Energy Efficiency | LADWP

Anthony Hernandez, Sr. Manager, Emerging Products | Southern California Edison

Abdullah Ahmed, Manager, Emerging Technologies | Southern California Gas

Open DSM Proceedings



IDSMD OIR

- An omnibus OIR to create a consistent regulatory framework for the guidance, evaluation, and planning of Integrated Demand Side (IDSMD) resource programs.

DR OIR

- Addresses many key foundational issues for the present and future of IOU demand response programs in California in meeting the state's resource planning and operational needs.

Water OIR

- Develops and expands water-energy partnerships between water and energy IOUs.

Energy Efficiency OIR

- Phase II focuses on the development of "Rolling Portfolios."

Other Considerations

Stranded Savings

Locational Targeting

Governor's Carbon Reduction Goals



California Energy Commission

Dave Ashuckian, Director. Efficiency Division

The Efficiency Division is committed to making California's businesses, homes, and appliances more energy efficient. This commitment is achieved by:

- ❖ Developing and implementing energy efficiency building standards that help ensure comfort and affordability.
- ❖ Identifying and adopting ways to reduce energy use in appliances, manufacturing, water systems, and processing functions.
- ❖ Letting Californians know that using energy wisely is a good investment in the economy and the environment.
- ❖ Assisting schools, colleges, hospitals, local governments, and others in identifying and implementing energy efficiency measures.

Next Century Water and Power: Efficiency Solutions for LA

ETCC - State of Affairs

February 17, 2015

David Jacot, P.E.

Director of Efficiency Solutions





SOUTHERN CALIFORNIA
EDISON[®]

An *EDISON INTERNATIONAL*[®] Company



Anthony Hernandez, P.E., LEED[®] AP is the Senior Manager of SCE's Emerging Products organization, leading a group of talented Engineers and Technical staff responsible for the Customer Service Product Development Life-Cycle process, as well as the research and demonstration of Energy Efficient and Demand Response technologies, strategies, and designs.

New Product Development and Launch





Southern
California
Gas Company



A Semptra Energy utility

Glad to be of service.®



Q1 2015 ETCC QUARTERLY MEETING

SoCalGas Emerging Technologies Program

Abdullah Ahmed, Southern California Gas Company
FEB 17, 2015

State of Affairs

SoCalGas Emerging Technologies Program

» Drivers:

- CPUC EE Program Decision
- California Long Term Energy Efficiency Strategic Plan
- California Title-24 Building Energy Standards
- DOE Standards for NG appliances and equipment
- AB 32 Greenhouse Gas Reduction

» Challenges

- Focus on advancing NG end-use technology efficiency
- Keep a step ahead of the standards
- Cost effective measures for EE programs
- Ensuring relevance of NG technologies in ZNE through Demonstrations and Showcases

LUNCH

Served in Innovation Center
Program will resume at 12:15 pm

PLEASE FILL OUT EVALUATIONS!



PARTNERING FOR IMPACT

Keshmira McVey, Program Manager | Bonneville Power Administration
[moderator]

Omar Siddiqui, Senior Technical Executive | EPRI

Michel Deru, Engineering Manager | National Renewable Energy Lab

Mark Modera, Director | Western Cooling Energy Center, UC Davis

Ryan Kerr, Manager of Emerging Technologies | Gas Technology Institute



Omar Siddiqui :- Senior Technical Executive in the Energy Utilization area at EPRI, including energy efficiency, demand response, energy storage

osiddiqui@epri.com, 650-855-2328



Michael Deru - Manages the Systems Performance section in the Commercial Buildings Research Group at NREL

Leads Space Conditioning Project and DOE's advance RTU Campaign

michael.deru@nrel.gov, 303-384-7503



Mark Modera - Professor at the UC Davis, and Director of Western Cooling Efficiency Center. The WCEC is a university research center that uses partnerships to accelerate the development and deployment of energy efficiency technologies, mostly associated with HVAC

mpmodera@ucdavis.edu, 530-754-7671

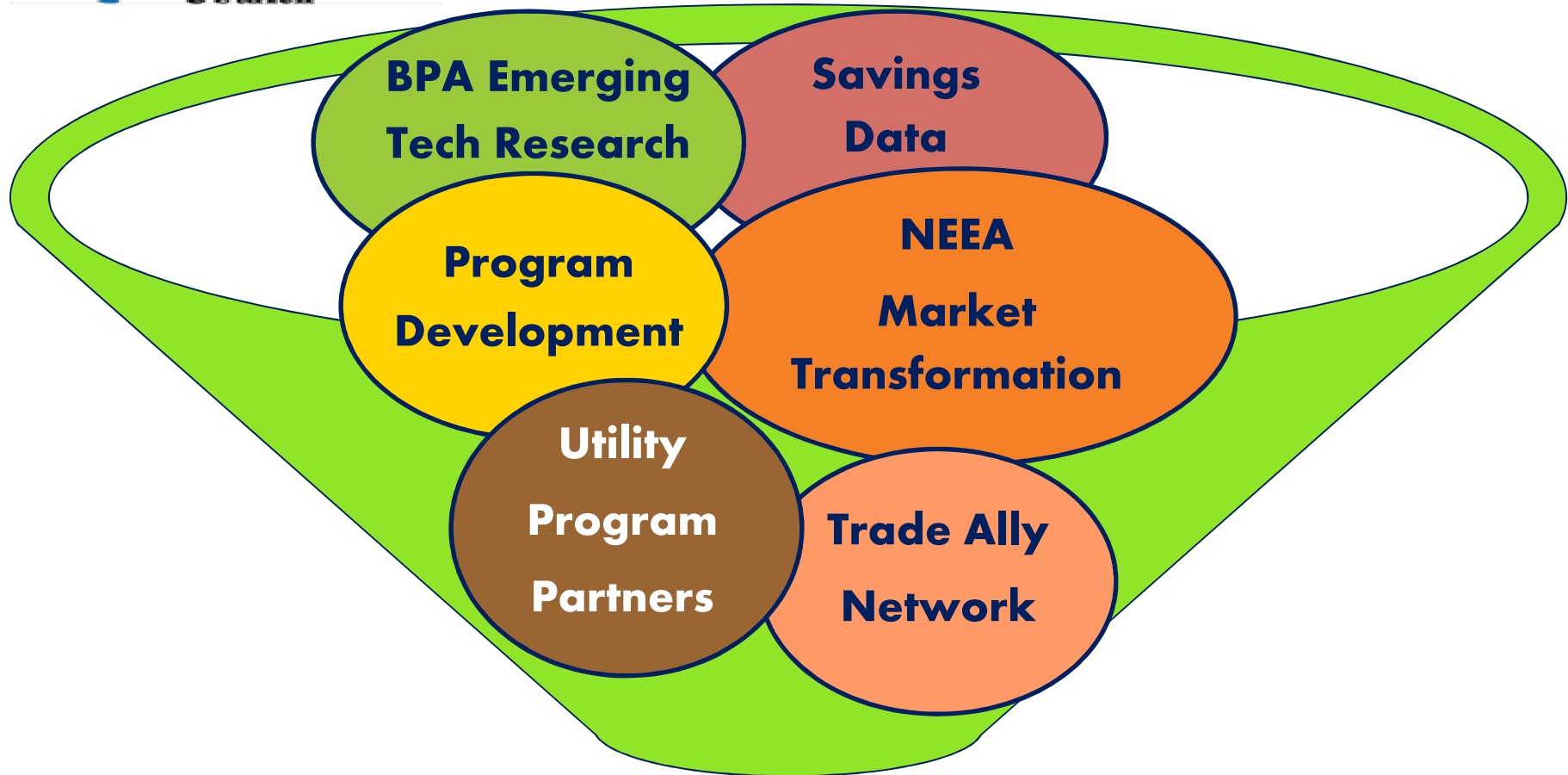


Ryan Kerr - Leads GTI's efforts to accelerate the commercialization and adoption of the latest energy efficient technologies for residential, commercial, and industrial end use markets

ryan.kerr@gastechnology.org, 847-768-0941

“Share the opportunities and challenges and how partnerships are accelerating the advancement and adoption of emerging technologies and programs.”

Conservation Targets

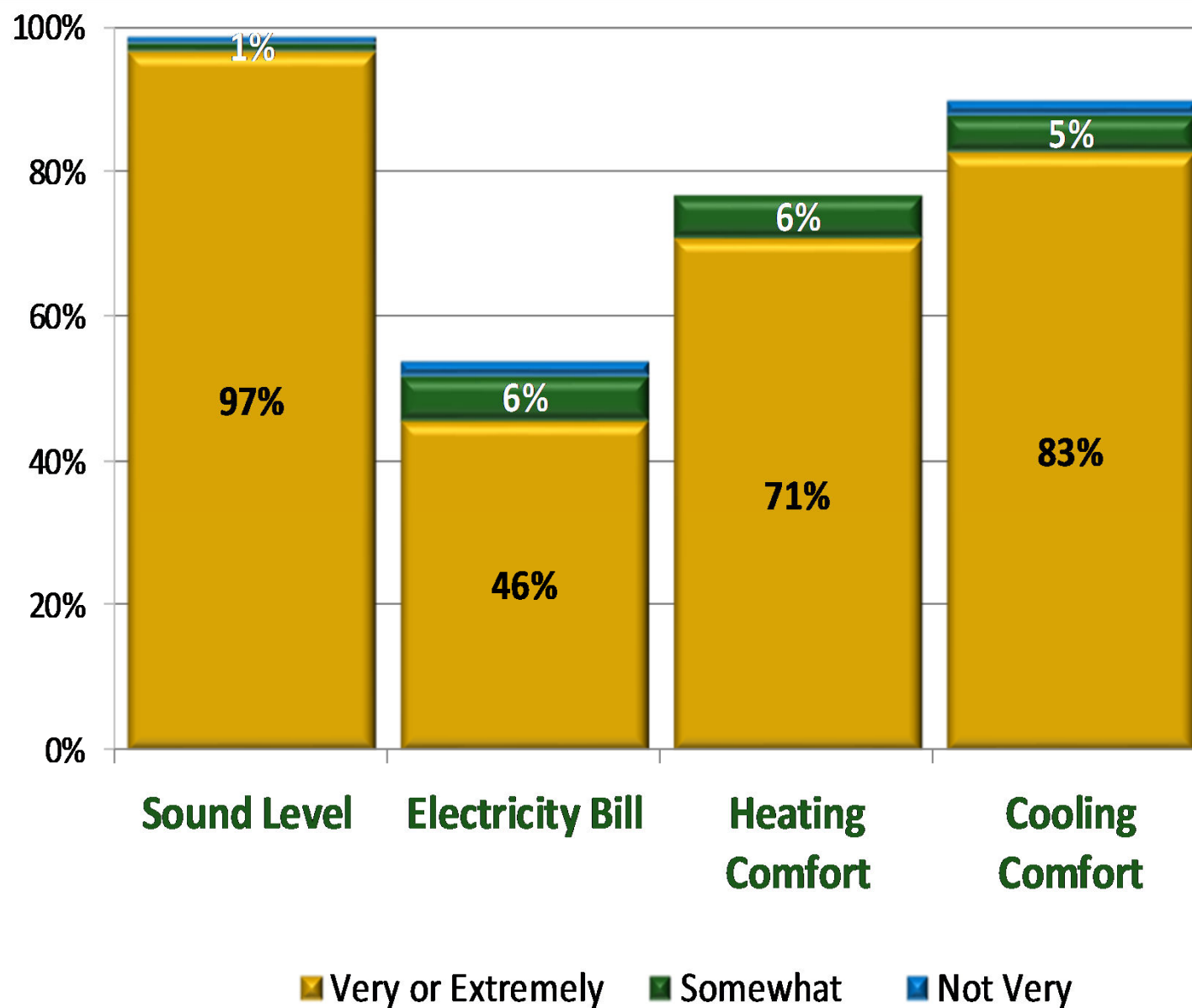


Much more than Research

What Does Success Look Like?



What Does Success Look Like?

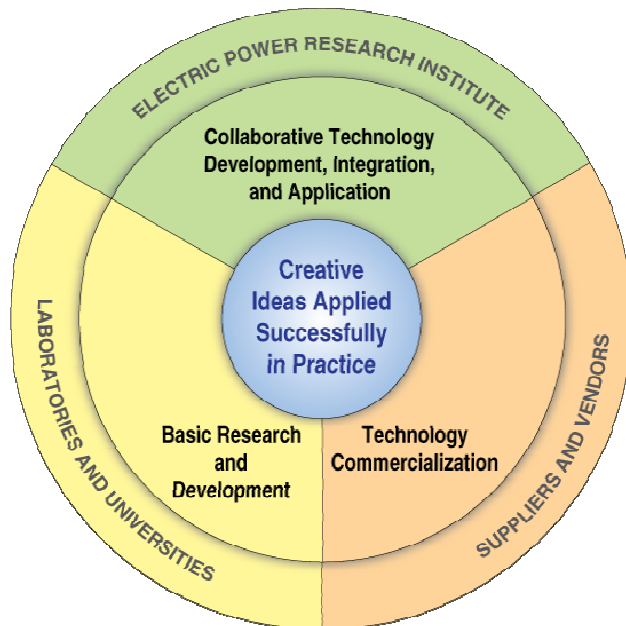


Omar Siddiqui, Senior Technical Executive | EPRI

Collaboration is in EPRI's DNA



- Pool utility RD&D for the public interest
- Prioritize objectives, such as EE in buildings
- Leverage worldwide network of experts
- Coordinate RD&D to mitigate cost and risk
- Inform policy
- Collaboration across technology value chain
- Universities and labs for fundamental research
- Suppliers, vendors, and market actors for commercialization
- Partnership → Scale → Market



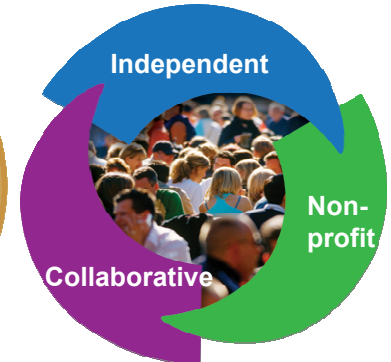
Partnering for Impact Commercial Buildings of Tomorrow

Omar Siddiqui
Senior Technical Executive
ETCC Quarterly Meeting
February 17, 2015

EPRI Mission



EPRI Attributes



Michel Deru, Engineering Manager
| National Renewable Energy Lab

National Renewable Energy Laboratory



Energy efficiency and renewable energy
from fundamental science to market
deployment

Commercial Building Research Group

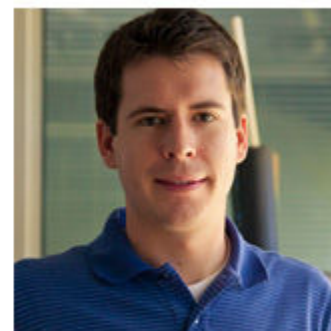
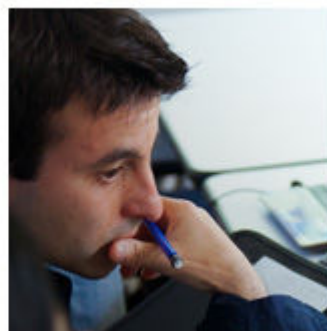
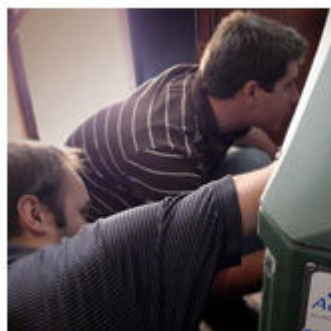
- EnergyPlus and OpenStudio
- Zero-energy
- DOE Better Buildings Alliances
- Technology demonstrations



Perspectives on Partnering:

- DOE labs have long history of partnering for technology development
- Partnering for large scale deployment and changing the world is new and challenging
 - Understand the landscape
 - Learn a new language
 - Break down traditional barriers
 - Requires a huge network of partners

Mark Modera, Director | Western Cooling Energy Center,
UC Davis



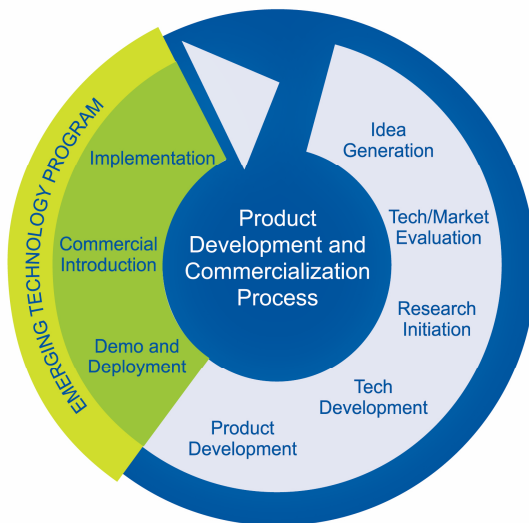
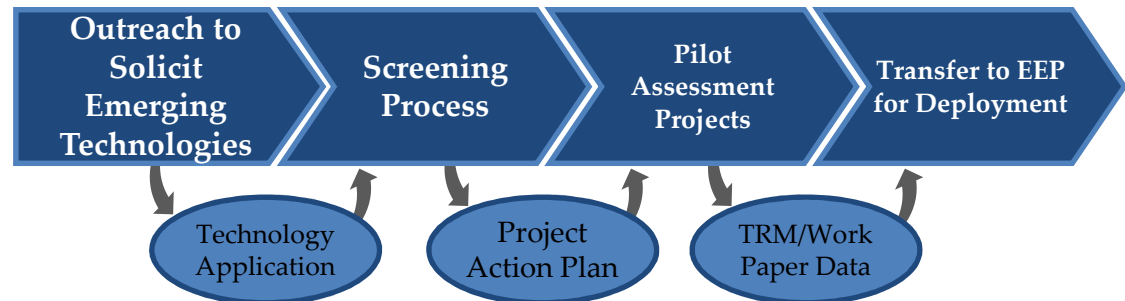
Highlights

- WCEC corporate affiliate program ties us to all key stakeholders
- Represented stakeholders include large manufacturers, small start-up manufacturers, utilities, code bodies, and large customers
- Initiatives designed to facilitate partnerships between affiliates
- Yardsticks and test standards developed to allow us and others rate technology performance

Ryan Kerr, Manager of Emerging Technologies
| Gas Technology Institute

Gas Technology Institute's Emerging Technology Program

Gas Technology Institute led, **utility driven**, North American **Emerging Technology Program** targeting residential, commercial, and industrial solutions. ETP's principle goal is to **accelerate the market acceptance of emerging gas technologies**.



Partnering For Success

GTI specializes in long-term engagements with utilities, technology manufacturers, and end-users to move from idea generation to implementation. This strategy provides GTI with a deep understanding of how the commercialization and deployment of new technologies impacts each stakeholder. In working across the product development and commercialization continuum, GTI can address barriers and create sustainable solutions efficiently and effectively.

Strategic Technology Development and Deployment through Collaboration



Collaboration with NREL, DOE, **manufacturers, national accounts, and utilities**



Large-scale monitoring shows **diverse runtimes for RTUs** and more therm use than energy models suggested

Based on monitoring results, targeted deployment of dedicated outside air systems (DOAS) as high efficiency **market entry point** application

- Partnered with national accounts to deploy condensing DOAS systems at “big box” retail outlets
- Demonstrated practical and technical viability highlighted by roughly 4 year ROI w/o rebates



GTI leading effort to increase thermal efficiency of DOAS from 90% to 93% through lab-based R&D



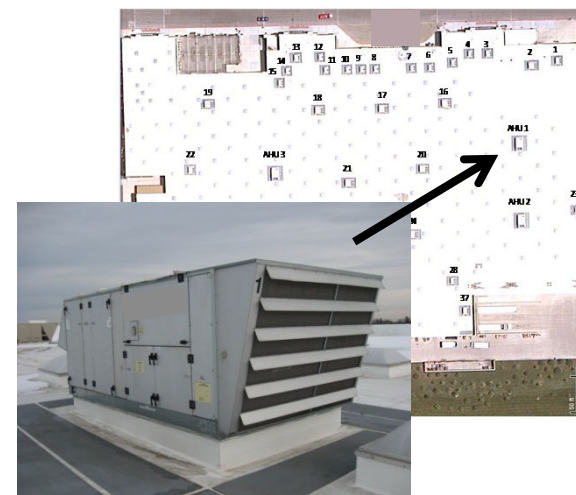
DTE Energy



nicor
G A S
An AGL Resources Company

CenterPoint Energy

Energy
Efficiency
Program



Nicor Gas ETP demo pictured



Thank you

Questions?



ADOPTING THE INNOVATION

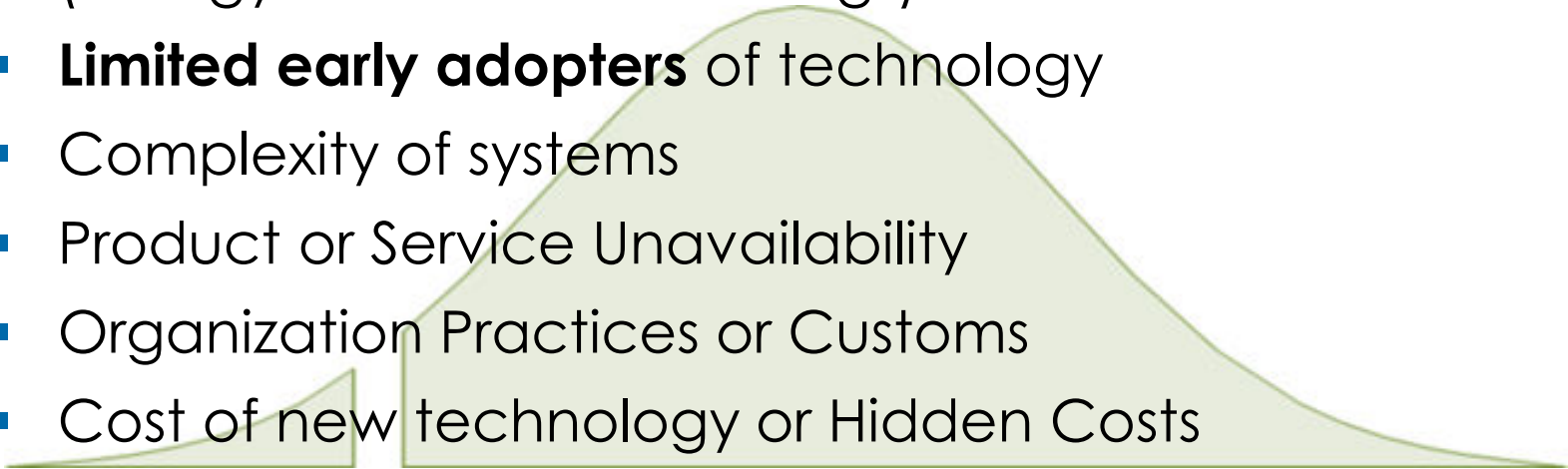
Jerine Ahmed, Senior Engineer | Southern California Edison
[moderator]

John Foley, CTO | ECS

Don Langston, President | Aire Rite

Daniel Cornejo, Director | Energy Solutions

BARRIERS AND CHALLENGES

- 
- **Performance uncertainties, lack of performance data** (energy and demand savings)
 - **Limited early adopters** of technology
 - Complexity of systems
 - Product or Service Unavailability
 - Organization Practices or Customs
 - Cost of new technology or Hidden Costs
 - Asymmetric information and opportunism
 - Market Intelligence
 - **Lack of information** of behavior related enabling technologies

BARRIERS & CHALLENGES (CONT'D)

- Lack of customer interest and product knowledge
- Lack of standards and methods of test
- Regional standards are not uniform
- Climatic differences require field testing in addition to lab testing
- Cost of performance/standards verification by industry
- Measurable and verifiable energy savings
- **Lack of awareness** of installation, operation and maintenance of new technology

PATH FORWARD

- Continued support and momentum towards higher levels of energy efficiency and demand in HVAC equipment
- Ensure efficient HVAC technologies are adopted and mainstreamed into programs
- On-going collaboration with stakeholders to identify and address HVAC offering needs
- Collaboration and partnership with national associations



PATH FORWARD (CONT'D)

- Utilize Emerging Technologies programs & initiatives to nurture the pipeline of products
- Undertake Market and Behavioral studies to provide critical intelligence
- Undertake lab and field tests
- Collaborate to understand & address new and advanced technologies' training needs
- Disseminate information in a meaningful manner



John Foley, CTO | ECS

ABOUT ECS

- Headquartered in Orange County, CA since 1994
- #62 on the Inc500 fastest growing privately held companies
- HP Cloud Center of Excellence (CCoE)

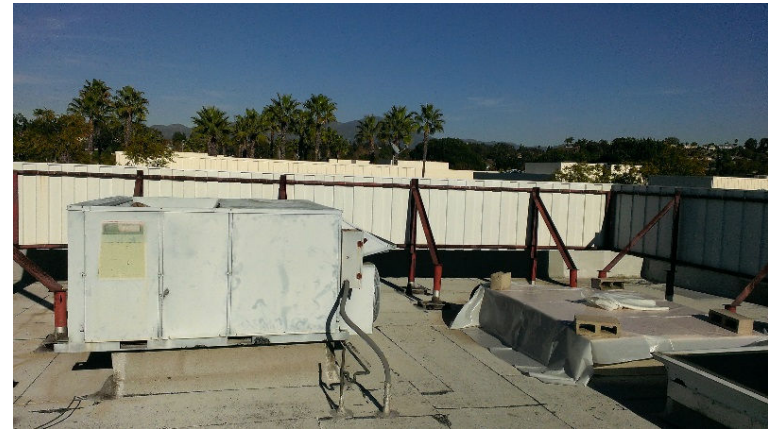
ECS Core Competencies & Practice Areas:

- IT Assessment / Business Justification / ROI
- Large Application Projects - ERP (Oracle Apps), CRM and HR
- Disaster Recovery / Business Continuity Planning
- Data Center Transformation – Relocation, consolidation, virtualization
- Network Infrastructure – IP Telephony, Data Center, Wireless, Security
- Platform Migrations – (Older to newer, OS, Storage, etc.)
- Converged Infrastructure – Matrix / Cloud Solution
- IT Managed Services
- IT Staff Augmentation



BEFORE...

- 6,000 sq ft, 2-story office building
- (2) ~12 ton 80's vintage A/C units and (2) 2 ton A/C units on the roof
 - Prone to failure. Parts availability a concern
 - Very inefficient and costly to operate
- (2) Computer rooms with specific cooling requirements
- Multiple hotspots in the building. Comfort an ongoing issue
- Business shutdown during retrofit was not an option



AFTER...

- Significant retrofit completed with no business outage
- Building hotspots eliminated. Employees now control their individual comfort settings.
- VRF controller offers very granular control and monitoring of environment
- Computer rooms now have VRF air handlers – increased reliability. Old units relegated to backup
- Noticeable reduction in power consumption



Don Langston, President | Aire Rite

ECS BUILDING



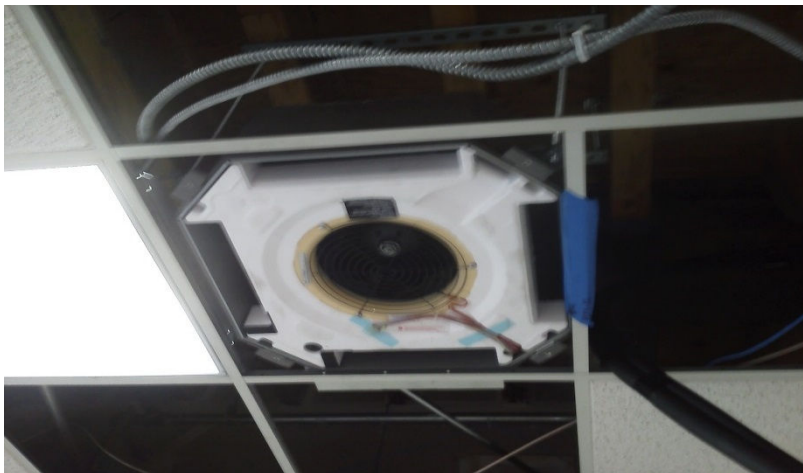
EXISTING – PACKED RTU



THE SOLUTION – VRF SYSTEM



THE SOLUTION – INSIDE VIEW



PROJECT RECAP – CONTRACTOR'S PERSPECTIVE

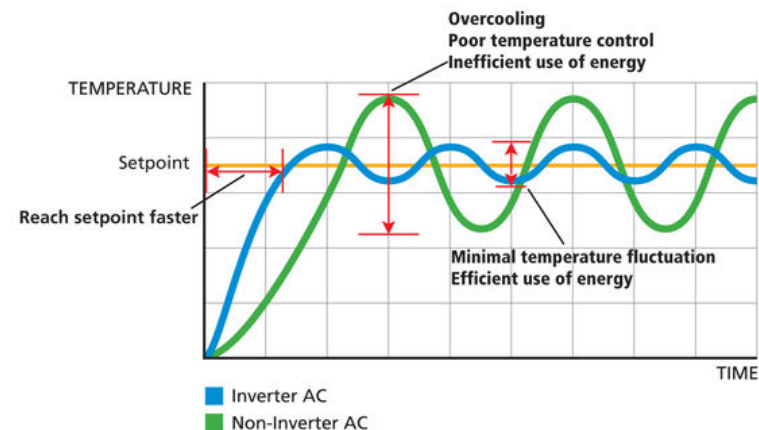
- Application challenges
- Benefits
- Data Collection Ongoing
- Lessons learned

Daniel Cornejo, Director | Energy Solutions

VRFs IN UTILITY PROGRAMS

Process for evaluating new technology into utility program

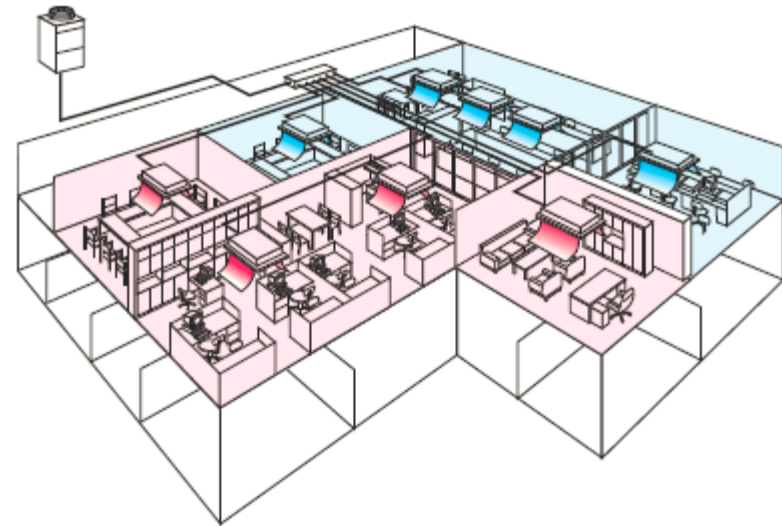
- Industry presentations & market feedback
- Independent studies
- Performance criteria



VRF MARKET & TECHNOLOGY

What's changed in 5 years

- Manufacturers selling in the US
- Efficiency
- Demand Response



SESSION WRAP-UP

PLEASE FILL OUT EVALUATIONS!

UPCOMING ETCC EVENTS

Date	Event	Location & Host
April 29 th	Q2 meeting: integrated solutions	San Francisco (PG&E)
May 7 th	Open Forum (FLoW)	Los Angeles (SDG&E)
August 11 th	Q3 meeting: ag/industrial/water	Los Angeles (SoCal Gas)
November 4 th	Q4 meeting: residential	Sacramento (SMUD & LADWP)
November 5 th	Open Forum	Sacramento (SMUD)

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/calendar>