thank you!

Thank you for being a part of e-Lab Summit 2017! Without your participation and perspectives, the collective work advanced at Summit would not have been possible. As you return to your work, we hope that the insights and connections that you made in New Mexico support you in meaningful and actionable ways. We wish you luck in all of your endeavors, and hope to see you at a future e-Lab event!

The e-Lab team
ground rules

you can say **who was there**
and **what was said**
but **not who said what***

*Please remember these rules as you share the outputs of your work at Summit, including the contents of this document.

**without their permission**
follow-up

Offers of support from the e-Lab team
Don’t hesitate to contact us with follow-up questions, comments, or requests related to e-Lab. For instance, we’re happy to:

• make introductions to other Summit participants, e-Lab network members, or RMI staff
• share information on the collaboration frameworks we use (e.g., types of complexity, 4 ways of talking and listening)
• work with you to refine the Summit for 2018
• send copies of RMI reports or other analyses, briefs, etc.
• explore ways for you or your organization to get more involved with e-Lab, including as a full member

Please contact Mark Silberg (msilberg@rmi.org) with any follow-ups.
e-Lab Accelerator

What is e-Lab Accelerator?
e-Lab Accelerator is an invitation-only, four-day working meeting to accelerate high-impact and innovative projects at the electricity system’s distribution edge.

Why attend e-Lab Accelerator?
We’ll help you unlock opportunities to drive projects forward more effectively, and collaboratively. Specifically, Accelerator will give teams:

- **A structured working session** to make progress on their project or initiative
- **A rich learning experience** featuring experts on the latest thinking on new utility business models and distributed resources in the U.S. electricity sector
- **Tools and training** to conceptualize problems in collaborative and innovative ways
- **New alliances** to form a broader support network with other teams working on similar projects
- **A unique environment** conducive to creativity and breakthrough ideas

Is e-Lab Accelerator for you?
Accelerator teams comprise 5–8 people representing multiple project stakeholders. Successful teams bring together the right combination of vision, experience, knowledge, and commitment to a project that can accelerate change in the electricity system. Projects must be actively under development at varying levels of maturity.

May 1-4, 2018
Sundance Mountain Resort, Utah
pod topics

Smart Heating Electrification

Infrastructure Planning and New Mobility

Blockchain and Transactive Energy

Rate Design Pathways

Value Stacking for DERs

Distributed Grid Infrastructure

Utility Business Model Pathways

LMI-Focused Utility Business

your pod’s recap is in the next section
Infrastructure Planning for New Mobility

When, Where, and How we charge
Objectives

What are your objectives for Summit

- Define Tactics for effective utility projects
- Identify levers for ensuring equity in access to benefits
- Develop best practices for a common regulatory framework across various assets
- IDEP “right” integrated distributed source planning for third-party developers and others
- Five W’s of Infrastructure Financing given impact of different options

Challenging to address in 48 hours
Objectives

What are your objectives for Summit

Discussed at Summit

1. Identify barriers and obstacles, but also target leverage points to accelerate deployment, such as legislation (incentives, regulatory, and private sector solutions)

2. Develop "new collaborative framework or platform" where we can challenge traditional roles and assumptions among key players of utilities, EVSE, auto's + bus, NGO's and innovators

Identify best/most efficient market mechanisms

Inclusion

DCFC models that work
Stakeholders

What is the EV and EVSE stakeholder ecosystem

- AV companies
- Communication companies
- Capital providers
  - EVSE
  - EV
- Insurers
- EV charging service providers
- Innovators
- Drivers + riders
- Potential EV owners

- Auto dealer
- Auto OEM
- Standard bodies (IEEE)
- Research Institutes
- EVSE site host
- ENI NGO
- Rate payer
- All humans

- Transit Planners
- Regulators
- Cities
- Policy Makers
- Utilities
- TNCs (Uber, Lyft)
- Public transit co
- Oil companies
- LMI communities
- Early adopter
Barriers

What are the primary barriers facing EVSE deployment

- Regulatory Barriers
- Awareness / Education
- Stakeholder Conflicts
- Mobility Market Uncertainty
- Increasing load in an environment of declining load growth
- Ability to demonstrate shared benefits & avoid cost shifts
- Flexible Resource & load management (e.g., importing renewable energy)
- Utilities
Barriers

What are the primary barriers facing EVSE deployment

- Return on Assets
- Location
- Scalability
- Ease of installation and use
- Uncertainty in Elec pricing
- Installation headaches
- Low utilization
- Multiple standards

Market certainty

Competitive Issue

Anybook + Fuse Product
Barriers

What are the primary barriers facing EVSE deployment

Profit gap for dealers and OEMs

Consumer awareness of benefits of EVs

Fighting for internal resources for EVs

Talent acquisition
Barriers

What are the primary barriers facing EVSE deployment

Drivers / Riders

Needs
- Affordability
- Accessibility
- Reliability

Barriers
- Economics
- Technological Obsolescence
- Ubiquitous charging infrastructure
- Awareness
Barriers

What are the primary barriers facing EVSE deployment

- New tools for regulatory processes to address emerging market issues
- Stakeholder process to narrow and focus objectives
- Incentives to drive mass EV adoption
- Risk of applying proven regulatory techniques to new technology & industry
- Cost of service reliability
- Testing

Gov’t/Reg/Planners
Levers

What are the mechanisms to increase EV and EVSE deployment

<table>
<thead>
<tr>
<th>Increase EVSE Deployment</th>
<th>Increase EV adoption</th>
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</thead>
<tbody>
<tr>
<td>Grants for OP retailer</td>
<td>Government mandate</td>
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<tr>
<td>Coord on work schedule</td>
<td>Signage for EVSE</td>
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<tr>
<td>Let utilities profit</td>
<td>Finance for EVs for</td>
</tr>
<tr>
<td>from EVSE</td>
<td>all credit levels</td>
</tr>
<tr>
<td>Apply infrastructure</td>
<td>Legalize direct sales</td>
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<tr>
<td>to EVSE</td>
<td>Tell story of how</td>
</tr>
<tr>
<td>EVSE incentives</td>
<td>EV are + debate range</td>
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<tr>
<td>Register to EVSE</td>
<td>anxiety</td>
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<tr>
<td>Alter building codes to</td>
<td>Purchase vehicle</td>
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<tr>
<td>Promote EVSE</td>
<td>Incentive</td>
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<tr>
<td>Direct city install</td>
<td>Free charging</td>
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<tr>
<td>Manage charging to</td>
<td>Check battery</td>
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<tr>
<td>diversity revenue streams</td>
<td>statewide mandate for</td>
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<tr>
<td>Statewide permit regulation</td>
<td>TNC to have EVs /</td>
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<tr>
<td>Storage pilot</td>
<td>SUV &amp; pickup</td>
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<td></td>
<td>Educate &amp; awareness</td>
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<table>
<thead>
<tr>
<th>EUSE</th>
<th>EV</th>
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<tbody>
<tr>
<td>Econ Incent &amp; tax breaks for EVs</td>
<td>Increased market &amp;</td>
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<tr>
<td>Properties, tax credit for</td>
<td>Fully Green Supply Chain</td>
</tr>
<tr>
<td>Prop. that avoid EUSE</td>
<td>for electricity (Green charging)</td>
</tr>
<tr>
<td>Utilities provide more</td>
<td>Purchase Incentive for Use</td>
</tr>
<tr>
<td>RE programs</td>
<td>EU Hou lanes</td>
</tr>
<tr>
<td>ECO friendly</td>
<td>More equitable incentives</td>
</tr>
</tbody>
</table>
| Compatible standard             | All publicly & multi-
|                | owns fleets           |
| Carbon tax                      | Make TCC easy to use |
| Make TCC easy to understand     | Utility tariffauthority to |
| Make financing available to all | Make financing available to all |
| credit (on-demand financing)    | credit (on-demand financing) |
| EV 1000 programs               | EU 1000 programs      |
Future Revenue
• Use 3 years of expected EV charging revenue (at home) to pay for DCFC buildout and ratebase that cost
• Similar to how new sub-development infrastructure buildout is paid for.
<table>
<thead>
<tr>
<th>Partner</th>
<th>Target</th>
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</thead>
<tbody>
<tr>
<td>Public</td>
<td>legal/reg</td>
</tr>
<tr>
<td>Utility</td>
<td>Make-ready</td>
</tr>
<tr>
<td>Private</td>
<td>Site host</td>
</tr>
</tbody>
</table>

P.U.P.P.
PUBLIC UTILITY PRIVATE PARTNERSHIP
Building Code

EVSE Retrofit

Requirements for new-build via updated NEC nationally, including:

1. EVSE type
2. Code stats for type
3. Quality
4. Vendors
5. # units
6. "Future proofing" in mind to reflect broader industry changes

- grants
- utility rate base
- tax credits
- public-private funding
- green bonds

EVSE total investment

Texasriverscity.com – Contact Kurt at Austin Energy 512-413-1255
EVs as Storage

• Pull future value of EV as flexible load and provide funds for EVSE buildout
• Consider the SGIP program or storage mandate in CA
Themes

Car Sharing (screwed)
AV is good but don't want for it to go on

TNC B2B model = Capital Light
Incentives for E-TNC nice mandates

Make TNC electric to show why AVs need to be Electric

Challenges

Car share programs don't have adequate charging access (and it doesn't work)

TNC lose $ when they have to charge

Companies don't feel comfortable displaying EVs due to EVSE
   - If they do they 'hog' public

This group is not involved in the AV Industry or regulatory work

TNC drivers have poor credit and can't get EVs
Next Steps

- Differentiating the different needs for car-sharing, ride-hailing, fleets.
- Get involved in AV world.
- Understand who are the winners/losers.
- Focus on making AVs shared.
- Reach out to Center for Automat. Res.
- Update transit planning.
- Integrate with Smart Cities.
- How will this serve rural populations.
- How to bring them into service.
- Need financial for TNC drivers to get EVs.
- Crafting the right stick.
What do you need to advance the work of this Group
Needs and offers of help

Knowledge of what pilots/demonstration projects/working business models are operating on electrification of shared vehicles and car pooling.

Mark

Matt Lehman

Bonder
Utilities can solve the near-term EV charging infrastructure challenge. Need more support for utilities. Stop letting perfect be the enemy of good.

I need input/engagement on how to threadneedle of contrasting positions on a spectrum & timeframe for regulated/competitive infra/equip ownership (behind/beyond meter) a pilots for commercial

SEPA can help understand utility role thru the EV working group - @evaka - sepa.power.org

Jonathan@vision-ride.com

Listen & Share
thoughts on which large NGOs are best

a) supporting important policy work re. EV infrastructure

b) making localized, small, creative re-grants to increase adoption in specific geographies

Fred

Kevin.miller@chargepoint.com

HAPPY TO SHARE MY PERSPECTIVE & EXPERIENCE

TOM
tom@greenlots.com
OPPORTUNITY TO DEPLOY LOW OR NO COST INFRASTRUCTURE TO SUPPORT PILOT/PROGRAM DEVELOPMENT WITH TNCs, PROVIDING SITE/SITE HOSTS, ALTERNATIVELY.

Matt Lehman
- Doubler
Needs from this group:

Experience + Expertise from:
- Utility folks
- USE people
- Regulators

to deepen my understanding beyond my local and anecdotal experience.

Max Tyler

HAPPY TO SHARE PERSPECTIVE & EXPERIENCE

Tom

tom@greenlots.com
Best Role for the Utility in Behind-the-Meter EV Infrastructure

- Build vs. Rebates
- Standards/Capabilities Regs.

Connect on Edge, make-ready service

jonathan@vision-ridge.com

Mike Backstrom

Learn wiljoong.com
EV Infrastructure planning tool
- spreadsheet with inputs for local information and established evidence-based calculations &
infrastructure recommendations

Douglas Jester

Don't know how much I can add but sounds like an interesting project.

Max@MaxTyler.US
- What is the impact of mass market EV adoption and transition to mobility-as-a-service on total VMT and on viability of transit and bike share programs?
- Identify fleet contacts who want to move forward with EV charging infrastructure in the next 2 years. - Robert Welco

I can help introduce you to my networks w/ access to fleet mgrs

-Erika
Help advancing the incentive/mandate for zero-emissions miles in TNC (and other?) fleets
I need help to understand impact of EVs on distribution grid planning & how to advance managed charging/optimization.

Also, please join SEPA’s EU working group.

- Ericka Myrick
SEPA

I can link EVs to standard distribution planning practice.

D. Foster

Very interested in connecting you with the right folks at SCE.

Michael.backstrom@ sce.com
I'd love to dive into the details however useful (design, framing, reg support etc.)

Kevin.miller@chargepoint.com

PARTNER w/ UTILITIES, EVSE, AND/OR PLANNERS/RESEARCHERS TO PILOT "IDER-LITE"
BRIDGING DRIVERS', UTILITIES', AND SITE HOSTS' NEEDS IN EVSE PLANNING & SITING
Partners for a prototype financing solution for EVSE + EV Deployment: observers and thought partnerships welcome.

Holmes Hummel @ cleanenergyworks.org

I’d love to dive into the details, a support overview, and get useful design drawings reg support, etc.

Jonathan@vision-ridge.com

Kevin.Miller@chargepoint.com

Hunter on the idea
Thank you all for your patience, attention, and dedication to this very important challenge. I had a great time facilitating this Pod and I took away many new insights, ideas, and challenges. Summit, and more importantly, EVSE and EV adoption are not possible without all of you. Please feel free to connect with me with any questions, suggestions, feedback, or collaboration ideas.

Thank You!

Garrett
thank you!

Garrett Fitzgerald | Gfitzgerald@rmi.org | Basalt, CO