



MICROGRID
KNOWLEDGE

Virtual Conference

Navigating Dual Disasters:

What are the Next Steps for California as it Emerges Out of Covid-19 and into Wildfire Season?

Agenda

Moderator: Peter Asmus (Navigant/Guidehouse)
Research Director

Speakers:

1. David Erne (California Energy Commission)
Supervisor, Grid Integration Research
2. Tim Hade (Scale Microgrid) COO and Co-founder
3. Andrea Ruotolo (Worley) Global Lead, Distributed Energy Systems
4. Juan Macias (AlphaStruxure) CEO

Resources:

- Speaker Bios
- Ask the Experts: Q&A at End
- Microgrid Resources Library

Meeting California's Climate and Policy Challenges

David Erne, California Energy Commission, Smart Grid Research

Challenges:

1. Increasing climate change impacts
2. 100% clean electricity by 2045
3. 5 million ZEVs by 2025

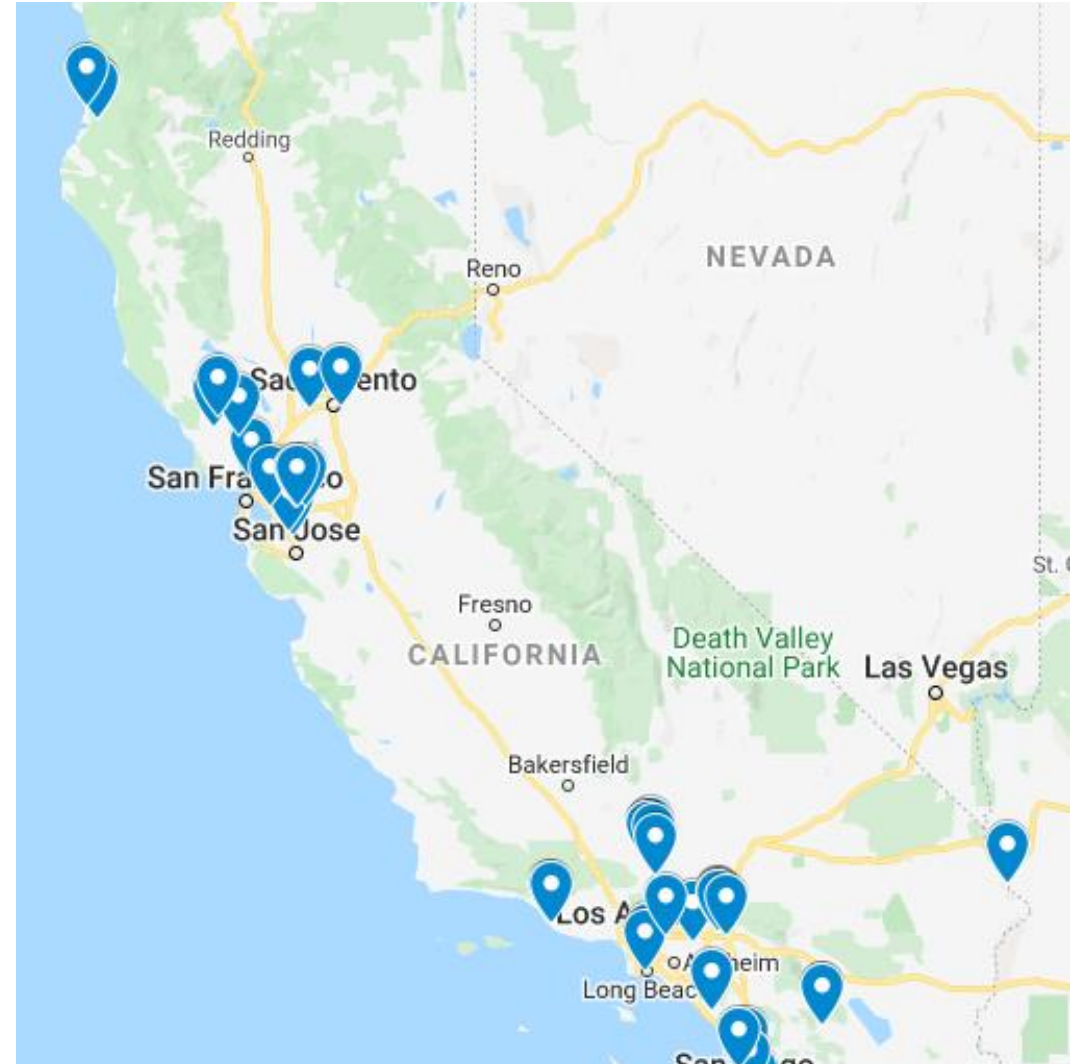


Solutions

- ~\$140 M in CEC research on microgrid development & demonstrations to push commercialization
- ~\$150 M in CEC research on energy storage, with a major focus on non-lithium ion energy storage
- Building models to help predict impacts on the grid from wildfire and to design microgrids for end user needs
- CPUC proceeding to support resilience and microgrid commercialization

Results / Recommendations

1. Demonstrating value in wildfires and PSPS
2. Recipients developing replicable models
3. Large portfolio for continued learning
4. Investors backing new projects

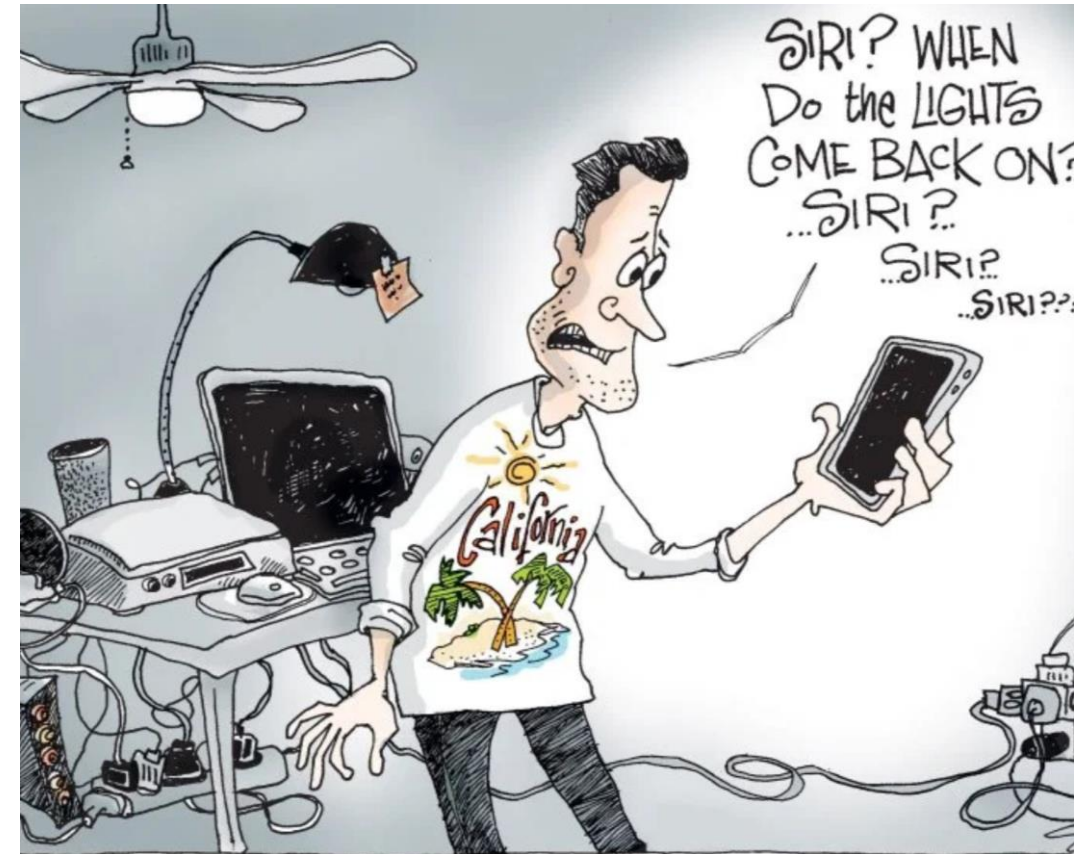


California's Electric Grid is Broken

Tim Hade, COO, Scale Microgrid Solutions

The Challenge:

1. In large portions of CA, the electricity grid is not safe to operate during peak fire season.
2. CA's fire season is getting longer + more severe.
3. The state doesn't have a good plan for fixing the problem.
4. COVID made everything harder.



*Microgrids/DERs are a **BIG** part of the solution*

- At this point, almost every key stakeholder agrees that a massive deployment of Microgrids/DERs is critical to providing safe and reliable power to CA ratepayers.
- There is very little stakeholder consensus with respect to how we go about facilitating a massive deployment of Microgrids/DERs.
- Several outstanding structural questions that are prohibiting progress, including:
 - What's the role for fossil fuels in CA's short-term distributed energy mix?
 - What's role should utilities play in facilitating microgrid deployments?
 - How do we ensure that microgrid technology isn't only available wealthy people/corporations?
- We were making progress on answering these complex questions, and then COVID.

Opportunity + Responsibility

- California is the best market opportunity in the history of distributed energy.
- We're not moving fast enough.
- Real people's lives are being destroyed while they wait for solutions.



Antifragile Microgrids

Andrea Ruotolo, PhD

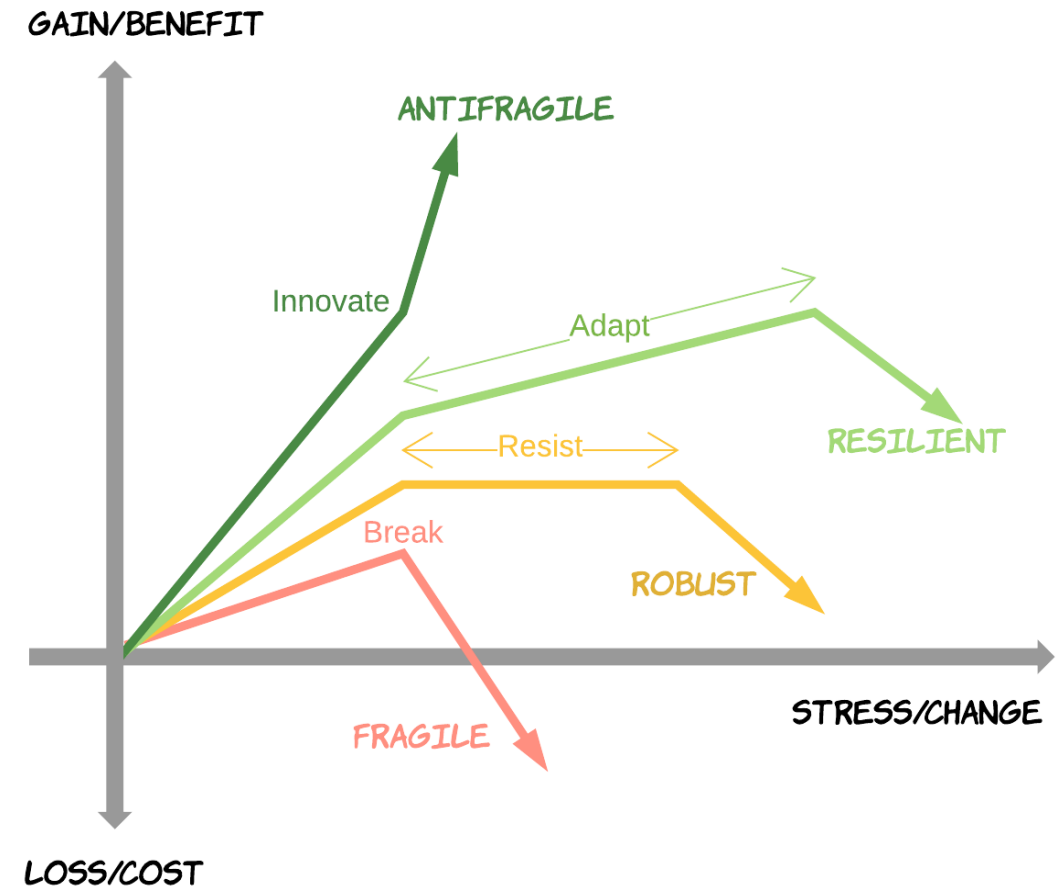
Global Lead, Distributed Energy Systems, Worley

“When you ask people, ‘what’s the opposite of fragile?’, they tend to say robust, resilient, adaptable, solid, strong. That’s not it. The opposite of fragile is something that gains from disorder.”

- Nassim Nicholas Taleb

Challenges:

1. Reactive vs. Generative design
2. The Core vs. the Crowd
3. Accounting for Uncertainty



Solutions

- #1 – *Reactive vs. Generative design*
 - Reactive: Fix it when it breaks
 - Predictive Maintenance: Fix it before it breaks
 - **Generative design**: Set up the system for continuous improvement
- #2 – *The Core vs. the Crowd*
 - Too complex to centrally plan, and too much inside-the-box thinking
 - People on the front lines know best where needs and opportunities are
 - **Engage the Crowd** to source disruptive solutions
- #3 – *Accounting for Uncertainty*
 - Model all practical scenarios

Results / Recommendations

1. Relaunch a Generative System
2. The Core frames problems, the Crowd sources solutions
3. Compile and Integrate knowledge

“If we relaunch the economy in the wrong direction, we will hit the climate crisis wall...We need to unite all the energies for a green recovery.”

*Pascal Canfin, EU Parliament's Greenrecovery Alliance
Reported in BNEF, 4th May 2020*



Energy as a Service: A digitized, decentralized, decarbonized approach for California

Juan Macías, CEO, AlphaStruxure – A Carlyle Group and Schneider Electric Company

Challenges:

1. Pre-COVID:
 - *Public Safety Power Shutoffs.*
 - Deep need for resilience, reliability, affordability and sustainability
2. Post-COVID:
 - Liquidity issues
 - Capital constraints
3. Regulatory complexity



Solutions

- **Expansion of Energy as a Service**
– an innovative enabling business model
- **Enabling regulations** for EaaS microgrids, distributed energy & resilience



Results / Recommendations

Results of Energy as a Service:

- Guaranteed stable & affordable power
- Eliminated economic loss from outages
- Exceeded sustainability objectives
- Risk transfer to EaaS partner
- No upfront cost

MICROGRID KNOWLEDGE SPECIAL REPORT

Why Energy-as-a-Service Microgrids
are the Logical Next Step for California...
and the Rest of the U.S.



Brought to you by  AlphaStruxure

<https://microgridknowledge.com/energy-as-a-service-microgrids-california/>



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Ask the Experts: Q&A Session

Type your questions in to the Q&A box

#MicrogridVirtual

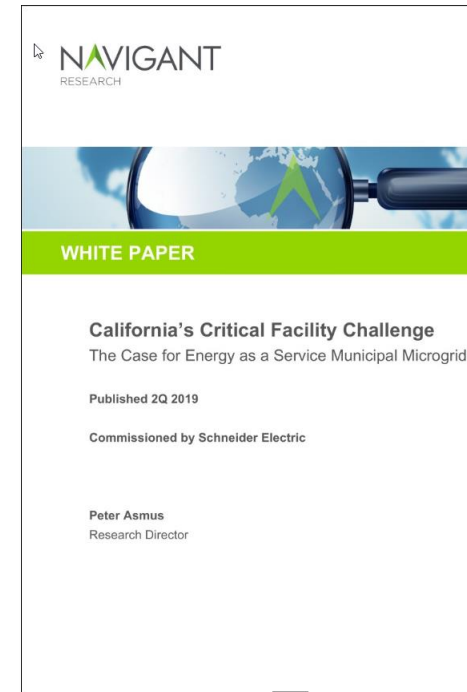
Microgrid Knowledge Virtual Conference Resource Library

Recommended Resources

Microgrid Resource Library

- www.ThinkMicrogrid.com

Network with the MGK Community on LinkedIn



Save the Date : Microgrid 2020 Conference Nov. 18-20 - Philadelphia, PA

Finance Session: *California as a World Leader: Will a Single State Transform the Microgrid Market?*

Plus 90 speakers in 30+ sessions on best practices

- 35 exhibitors
- Networking opportunities





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Thank You!

Next Session: How Microgrids Make Money: A Tutorial on Ways Microgrids Earn Their Keep @ 11AM Eastern

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