

EMBEDDED M&V

ALIGNING IMPLEMENTORS, EVALUATORS, AND CUSTOMERS!

2019 Midwest Energy Solutions Conference
Chicago

ABOUT ERS

Engineering firm with 20-year history in clean energy

- 90+ engineers, analysts, and support staff focused on sustainability, cleantech, and energy efficiency

Our Core Capabilities

- Energy efficiency program evaluation, measurement, and verification (EM&V)
- Other program engagements including program design, technical assistance, and outreach services
- Modeling and advisory services for CHP, energy storage, and complex efficiency and NWA projects

Jeff Perkins

- Started in EE doing commercial energy audits in 1985
- Spent a decade in the industry, two decades out of it, back in it past 5 years
- **Lead business development for ERS**



THE EVOLUTION OF ENERGY EFFICIENCY



40 years ago: *Efficiency as an Objective*

- Conservation, Customer Education



35 years ago: *Efficiency as a Resource*

- Demand Side Management (DSM)

Savings

LION

RS PER YEAR

Electricity use of
ds in Indiana

*Electricity
Bill Savings for
U.S. Consumers
and Businesses*

\$3 BILLION

PER YEAR



Pollution Reduction

20 MILLION

METRIC
OF CO₂ P

Or the equivalent emissions

10 COAL-FIRED POWER PLANTS

(500 ME

Plus large reductions in other po

20 years ago: *Efficiency as a Public Good*

- Fund it, Deliver it, Measure it

EFFICIENCY EVOLVES

We stand at an inflection point.

What is the purpose of efficiency going forward?

Capacity? Climate? Carbon?

EFFICIENCY AND THE EVOLVING GRID

Connecting for the future.



Connecting... who to who?



Connecting... who to what?



NEW EM&V APPROACH...

Get together at the beginning of:
program launch, 3-year cycle, etc.

HELPS IMPLEMENTERS

- Let implementers set some of the goals
- What “free” research would help?
- Where are deep dives needed?

HELPS ADMINISTRATORS

- No surprises

HELPS EVALUATORS

- Early evaluability assessment
- Benchmarking & baselining
- Impact data needs
- Limit mile-wide, inch-deep investigation



NEW EM&V APPROACH... **(OLD PARADIGM)**

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HELPS ADMINISTRATORS

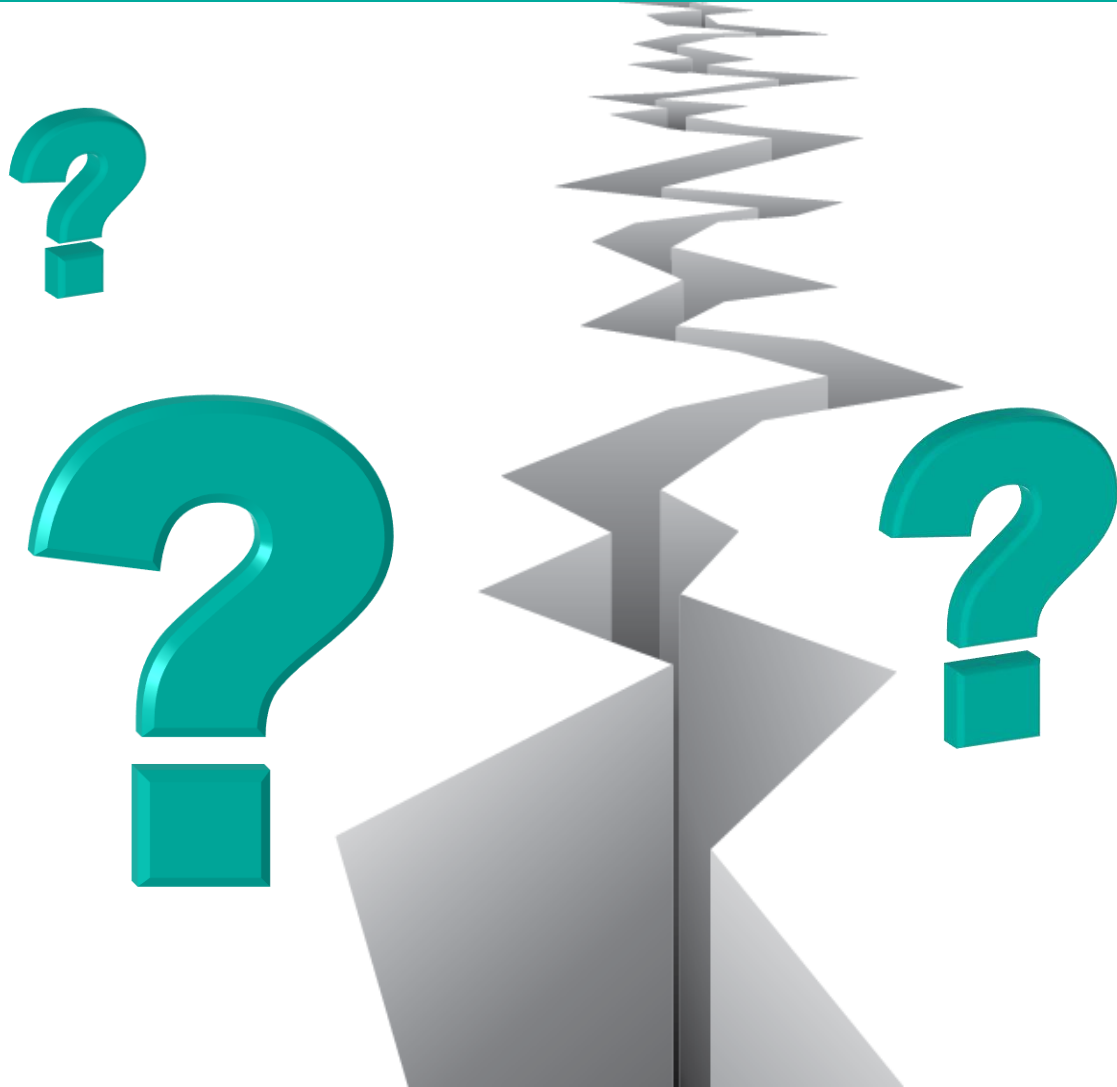
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HELPS EVALUATORS

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NEW PARADIGMS ARE EVERYWHERE

What should M&V look like when facing these new environments?



P4P AND NMEC

- Implementors driving relationships
- Engagement could assure savings
- Customer engagement with data

FLEXIBLE LOADS

- Demand response
- Consumption response, electrification
- Distributed generation/storage
- Data provides customer value

EMBEDDED M&V

- Benchmarking & baselining
- Temporal & locational targeting
- Data drives customer knowledge

THE FUTURE OF M & V

WILL BE DIFFERENT

AMI DATA WILL WORK

SOMETIMES

M&V 2.0 WILL WORK

SOMETIMES

**BUT
SOMETIMES
WON'T BE ENOUGH**

MORE WILL BE NEEDED

EMBEDDED M&V... WITH IoT



Cloud Database

Deploy dozens of sensors
Monitor spaces
Monitor things
Streaming over private network
Delivering granular data to the cloud

Driving deeper engagement
Customers
Implementors
Evaluators
All extracting value from the data



WHAT IS THE GOAL?

MORE OF THE SAME?

- Connect implementors to evaluators

MORE MEANINGFUL ENGAGEMENT?

- Connect customers to data

DECARBONIZATION?

- Connect customers to carbon

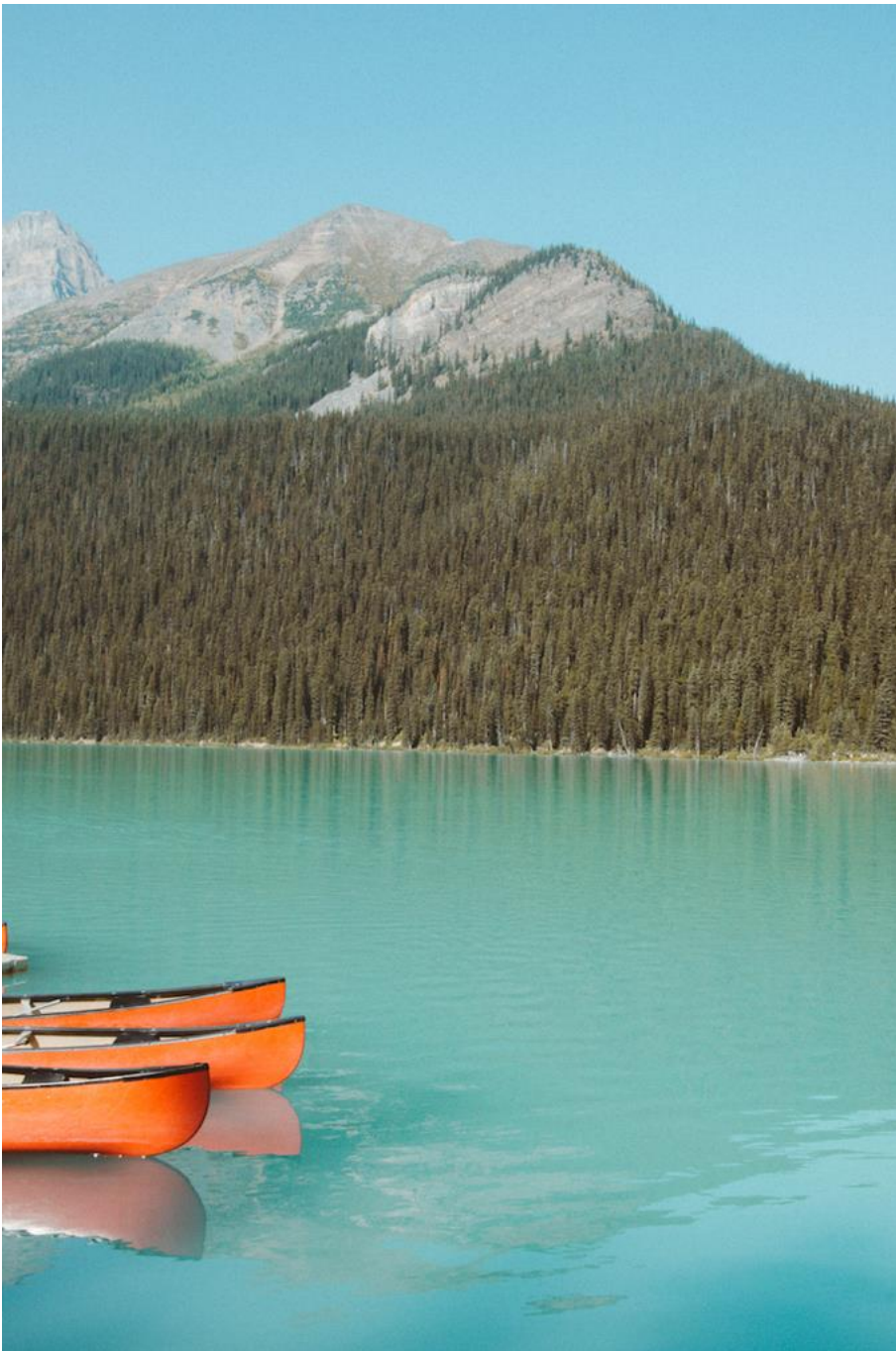
SOMETHING ELSE?

- Wrong conference session

CONNECTING FOR THE FUTURE

More Granular Data
To Engage the Customer
And Provide Additional Value

Graphic from: alm.com/



CONTACT Us



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