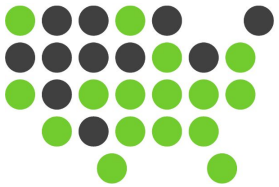

ODIN

OUTAGE • DATA • INITIATIVE • NATIONWIDE

A NETWORK OF ELECTRIC UTILITY RESILIENCE LEADERS

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SPEAKERS

Chris Irwin
US Department of Energy — Program Manager; Transactive Energy, Communications and Interoperability

Supriya Chinthavali
Oak Ridge National Laboratory — Group Leader; Critical Infrastructure Resilience Group

Ricardo Montano
Southern California Edison — Senior Manager; Enterprise Architecture

Matt Highfill
Outage Data Initiative Nationwide (ODIN) — Project Manager

DEPARTMENT OF ENERGY · UNITED STATES OF AMERICA

OAK RIDGE National Laboratory

SOUTHERN CALIFORNIA EDISON®
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ODIN

Problem:

Outage data from utilities is valuable to customers, neighboring utilities, and regional emergency management partners, but data is too often fragmented, unavailable, and/or lacking commonalities

Solution:

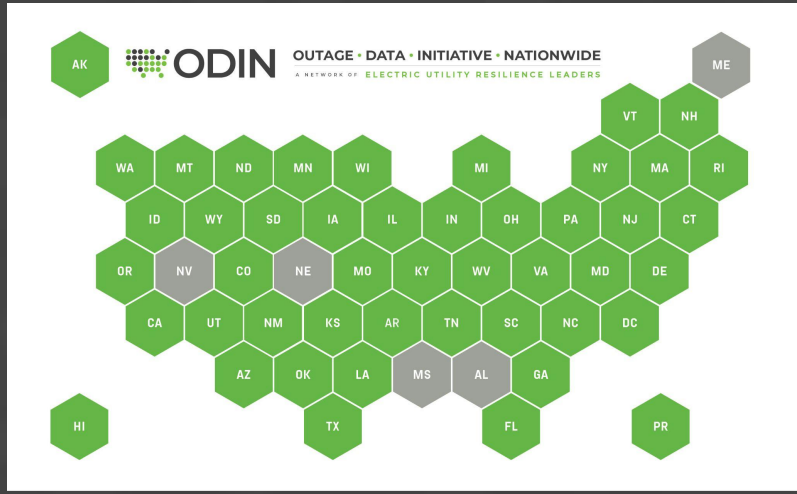
ODIN is is a network of leading electric service providers who are committed to providing comprehensive interoperable power outage data that enables utilities and others to exchange data freely with designated stakeholders at all levels — helping restoration, reliability, risk mitigation, storm response, and more

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

SINCE THE WHITE HOUSE CTA

THANK YOU to the White House Office of Science & Technology Policy and to utilities and vendors for committing to leading resilience!

- 35 Outage data commitments announced at the White House Electrification Summit in December 2022, 25 are now implemented with 9 underway
- ODIN participation has grown to:
  - 45 States + Puerto Rico
  - Over 44 Million customers
  - 125 utilities and 15 vendors



= STATES & TERRITORIES SUPPORTING **ODIN**

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

conEdison, inc.
FirstEnergy
Hawaiian Electric
People. Power. Possibilities. Central Hudson A FORTIS COMPANY
evergy
EVERSOURCE
PG&E
aps
LUMA
MIDAMERICAN ENERGY COMPANY
nationalgrid
SOUTHERN CALIFORNIA EDISON
Seattle City Light
VERMONT ELECTRIC CO OP INC
Lake Country Power
CenterPoint Energy
Beltrami Electric Cooperative Inc.
TACOMA POWER TACOMA PUBLIC UTILITIES
HOLY CROSS ENERGY EST. 1939
ORCAS POWER & LIGHT CO-OP SERVING THE SAN JUANS
Portland General Electric
CLALLAM COUNTY PUD Bringing Energy To Life
BENTON P.U.D
PSE PUGET SOUND ENERGY
SNOHOMISH COUNTY PUD PUBLIC UTILITY DISTRICT NO. 1
AVISTA
PUD Jefferson County Public Utility District
PEND OREILLE PUBLIC UTILITY DISTRICT
DAKOTA ELECTRIC ASSOCIATION
ECE East Central Energy
DOUGLAS COUNTY P.U.D.
McLeod COOPERATIVE POWER
KPC KANDIYOHI POWER COOPERATIVE
REA Runestone Electric ASSOCIATION
Goodhue County Cooperative Electric
MASON COUNTY PUD
MASON PUD 3 PUBLIC UTILITY DISTRICT
Stearns Electric Association
CENTRAL LINCOLN A COMMUNITY-OWNED ELECTRIC UTILITY
MLEC Mille Lacs Energy Cooperative
GVP GRAND VALLEY POWER Empowering Lives with Hometown Service
Grayson Collin Electric Cooperative
EMC Habersham Electric Membership Corporation
LUMBEE RIVER EMC
Unitil Fitchburg Gas and Electric Light Company
TANNER ELECTRIC Cooperative
CORE ELECTRIC COOPERATIVE
BEMC BRUNSWICK ELECTRIC
DEC
JOEMC Jones-Onslow Electric Membership Corporation
South Central Indiana SCI REMC
BENCO ELECTRIC COOPERATIVE
BLUE RIVER ELECTRIC
Meeker Cooperative Light and Power Association
Freeborn Mower Electric Cooperative
TRAVERSE ELECTRIC COOPERATIVE, INC.
Dixie ELECTRIC COOPERATIVE
mienergy COOPERATIVE
WILD RICE ELECTRIC COOPERATIVE, INC.
REDVILLE SEBLEY CO-OP POWER
SIOUX VALLEY ENERGY
CEC
Poudre Valley REA
TRICO AN ENERGY COOPERATIVE
AND MORE!
EEA
CHELCO
UNITED POWER
LITTLE RIVER ELECTRIC COOPERATIVE INC.
HINGHAM MUNICIPAL LIGHTING PLANT

USE CASE

FEDERAL EMERGENCY RESPONSE

Standardized Outage data (from ODIN) is now ingestible into DOE's real-time situational awareness platform namely EAGLE-I.

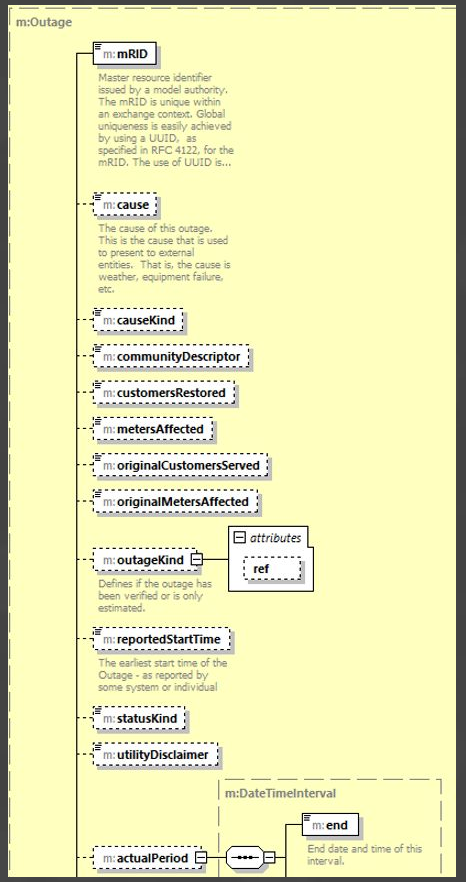
- Support emergency management as ESF#12[1] coordinator
- Improves interoperability

FEMA

Homeland Security

[1] Emergency Support Function - Energy focused

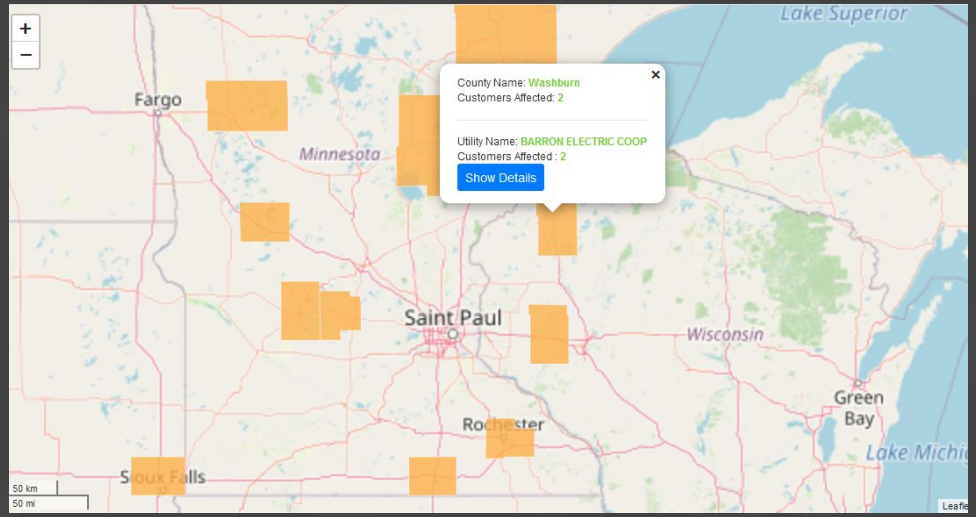
ODIN's focus is on the data standard, not the map



ODIN OUTAGE DATA INITIATIVE NATIONWIDE

ODIN MAP

Not intended to replace vendor products and services



Outage ID: **6167c3b5-200b-4f38-9e32-e405fc50f9dd**

Meters Out: **3**

Last Updated: **01/05/24, 12:15 PM**

Start Time: **01/05/24, 11:38 AM**

Estimated Time to Restore: **01/05/24, 05:30 PM**

Outage ID: **af477dea-b3c8-4647-8927-a1eec7e17a1e**

Meters Out: **14**

Last Updated: **01/05/24, 12:15 PM**

Start Time: **01/05/24, 09:09 AM**

Estimated Time to Restore: **01/05/24, 06:00 PM**

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

WHAT IT IS / WHAT ITS NOT

- Near-Real-Time - Updates every 5-15 minutes
- ODIN is **NOT** a competitor to IEEE 1366, 1782 or any reliability standard
- ODIN **IS** an interoperability standard
- ODIN **IS** focused on Restoration and Recovery Phases
- ODIN is **NOT** a replacement for existing utility outage maps
- ODIN does **NOT** include any PII
- ODIN/OSTP goal is to provide granularity down to census block group

“Screen-Scraping” = Substandard Data

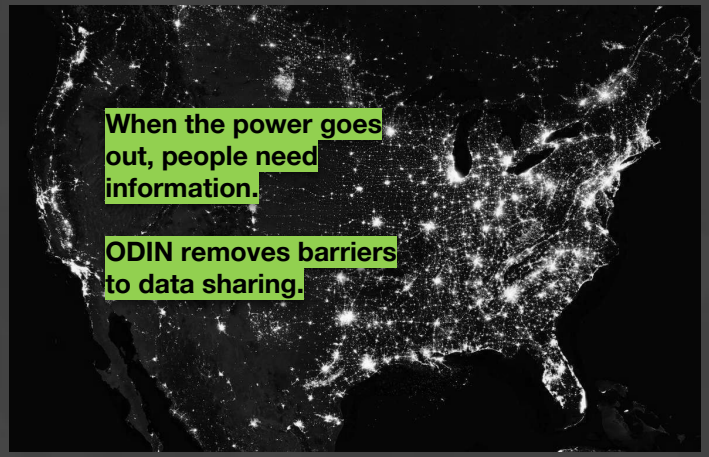
- If you have an outage map today, it’s almost certain that your data is being screen-scraped; gathered and shared by public and private actors, often as “stale” data.
- Bots slow your website response times and increase upkeep costs.
  And simply blocking unknown IPs can have unintended effects.
- Inconsistent outages cause confusion and inefficiencies for customers and emergency response.
- Websites are often unavailable in emergencies.

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

ELECTRIFICATION IS A FEDERAL PRIORITY

To meet supply and climate goals, we need to transition to a net-zero grid and accelerate electrification. In the future, 50% of U.S. energy use may come from electricity, versus 21% today.

- The Bipartisan Infrastructure Law earmarks **$65 billion** to upgrade the national power infrastructure through 2030 and beyond
- The Inflation Reduction Act authorizes **$369 billion** in funding for climate change-related and clean energy initiatives
- ODIN is a Program Policy Factor for GRIP Topic 1 Funding



ODIN OUTAGE DATA INITIATIVE NATIONWIDE

BENEFITS OF DATA SHARING

1. Less time on the phone in an emergency, allowing you to concentrate on crucial restoration efforts
2. ODIN allows you to control and authoritatively share YOUR data
3. Saves lives in underserved communities and for the electricity-dependent
4. Unlocks opportunities for federal funding
5. Committing to ODIN is a commitment to leading on resilience

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

WHO NEEDS DATA?

Customers, Communities, Agencies

- IOUs, Cooperatives, Municipal Utilities
- Emergency Management Agencies (all levels)
- First Responders
- Medically Dependent Individuals
- Underserved Communities/Energy Equity
- Utility Associations (e.g.; EEI, NRECA, APPA)
- FEMA, HHS, DOE
- And more…

NEIGHBORING UTILITIES

EMERGENCY MANAGEMENT

OUTAGE RESTORATION

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

About SCE

SOUTHERN CALIFORNIA EDISON®
An EDISON INTERNATIONAL® Company

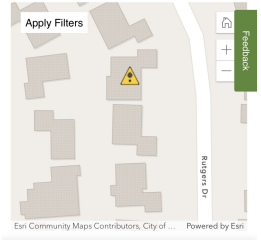
- An investor-owned electric utility located in Southern California with a service territory in excess of **50,000 square miles** serving approximately **5 million customers.**
- SCE maintains and operates one of the largest electrical distribution systems in the country – more than **900 substations, 4,500 distribution feeders**, 11,000 capacitor banks, 100,000 miles of power lines, 1½ million utility poles, and 650,000 transformers.
- In addition, there are about **20,000 distribution automation devices** including remote automated reclosers, remote circuit switches, programmable capacitor banks, and voltage regulators.
- SCE has 14 switching centers, 2 grid control centers, 4 distribution operation centers, 3 data centers, and additional centers to support telecommunications, security and grid applications.

SCE OUTAGE DATA

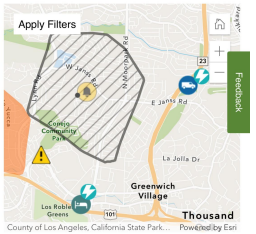
How does SCE track and report on outages internally, to customers, and community partners?

- 4 Primary Outage Types
- Outage data use for:
  - Customer Communications
  - Internal operations
  - Public Safety Partners
  - Metric tracking and reporting
- Outage data provides situational awareness for our operators

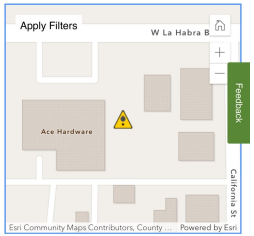
MAINTENANCE OUTAGE MAP VIEW



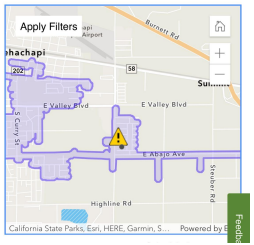
PSPS MAP VIEW



REPAIR OUTAGE MAP VIEW



ROTATING OUTAGE MAP VIEW

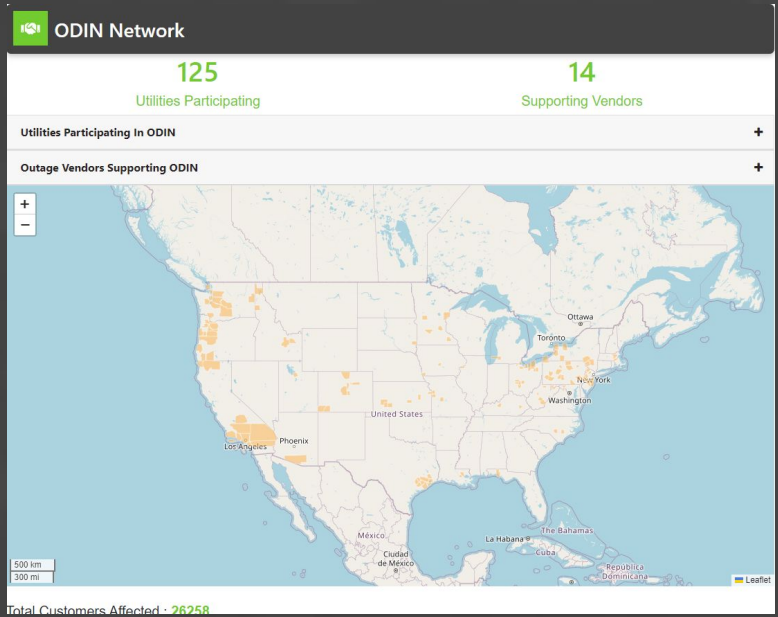


SOUTHERN CALIFORNIA EDISON

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

BENEFITS OF NATIONWIDE OUTAGE DATA

- Standard data model with well-defined APIs for sharing and accessing outage data
- Shared situational awareness and common operating picture for grid operations
- Determination of impact and affected neighboring utilities
- Help with response from emergency operators



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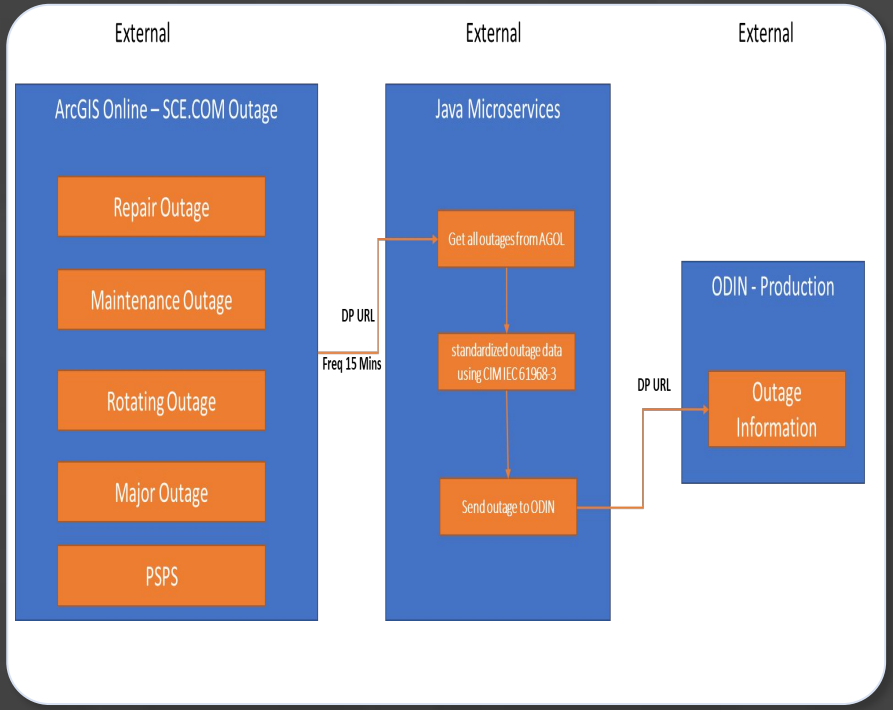
ODIN OUTAGE DATA INITIATIVE NATIONWIDE

SCE's ODIN IMPLEMENTATION

- SCE's outage data was available on ArcGIS Online (AGOL) used to feed SCE.com maps
- Team developed a set of microservices:
- Extract outage data from AGOL
- Convert to Standard 61968 data format
- Call ODIN APIs to post outage information
- Received great assistance from ODIN team
- Approximate hours of development time between 100-120



FUTURE OUTAGE DATA IMPROVEMENTS

- SCE is focused on more precise and accurate information for customers
  - Outage alerts
  - Estimated restoration times
- As an industry we should continue to encourage other utilities to be part of ODIN
- The broader the participation, the more visibility we have to high impacting outages
- Explore more granular data

Announcing: ODIN User Consortium

Goal: Inform ODIN on improving value to utilities, improving input/output interfaces and addressing industry use cases.

Utilities

- Munis
- Coops
- IOUs

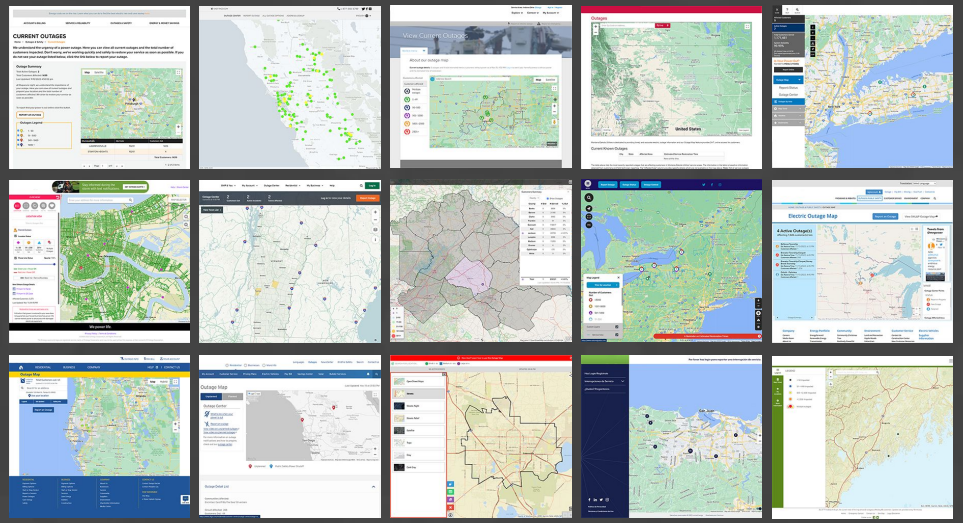
Other Stakeholders

- OMS Vendors
- State Emergency Management
- Industry SMEs

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

COMMON OPERATING PICTURE

A standardized, single “pane of glass” can tell the complete story



© Dorothy Lozowski, **POWER**

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

USE CASE

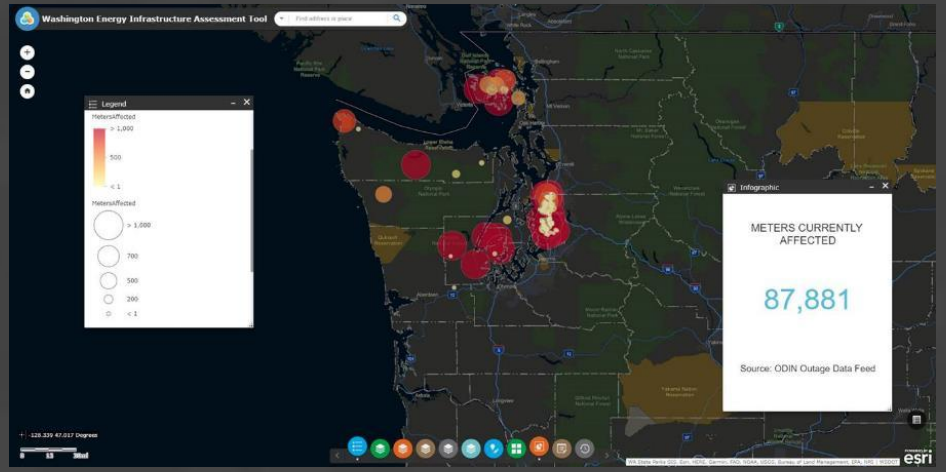
SEATTLE CITY LIGHT + WASHINGTON

Seattle City Light

WASHINGTON ENERGY INFRASTRUCTURE ASSESSMENT TOOL

Collaborative efforts operational since 2021

- Monitoring electric outages from storms and other causes in a single “pane of glass”
- Energy sector operational status changes due to high-impact events, infrastructure, county status, and other factors
- Covers wildfires and utility service territories
- Supports planning efforts for resilience and coordinates mitigation planning between utilities and local emergency management



© Washington State Department of Commerce

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

CASE STUDY

MINNESOTA RURAL ELECTRIC ASSOCIATION

A statewide association representing 44 not-for-profit coops

85%
of Minnesota's Landmass

⅓ Pop.
of Minnesotans Served

138k Miles
of Electric Line

Standardized outages provide visibility to multiple stakeholders

MREA

"Creating a state-wide map of outage data will benefit stakeholders in Minnesota before, during, and after high-impact grid and weather events."

~ Darrick Moe, President & CEO, Minnesota Rural Electric Association

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

INTEGRATION OPTIONS

Standards

- Common Information Model (CIM) IEC 61968-3
- MultiSpeak v4.1 (and greater)

Methods

- Vendor Supported Integration
- ESB Integration
- Utility Development via API

As fast as a 30-minute integration setup
One-on-one support available at no additional cost

ODIN OUTAGE DATA INITIATIVE NATIONWIDE

PARTICIPATION MADE EASY

Integrate through your outage data vendor

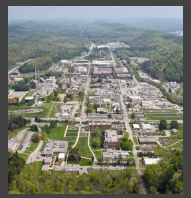
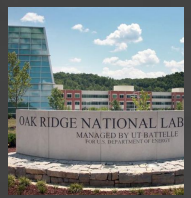
AERINET SOLUTIONS	CGI	datacapable	esri	FUTURA SYSTEMS	MILSOFT Utility Solutions	nisc	ORACLE
OSI An AspenTech® Business	Schneider Electric	Sentient ENERGY	SEW	SIENA	STR energy services	Survalent.	… and growing!

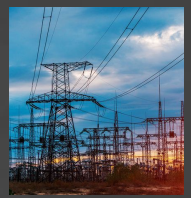
Contact ODIN@ORNL.gov today to see if your vendors support ODIN

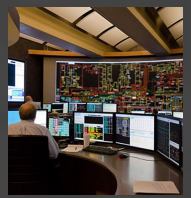
ODIN OUTAGE DATA INITIATIVE NATIONWIDE

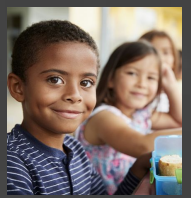
SECURE EXCHANGE OF DATA

The Outage Data Initiative Nationwide is part of the the U.S. Department of Energy and Oak Ridge National Lab







OAK RIDGE National Laboratory

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EPRI ELECTRIC POWER RESEARCH INSTITUTE

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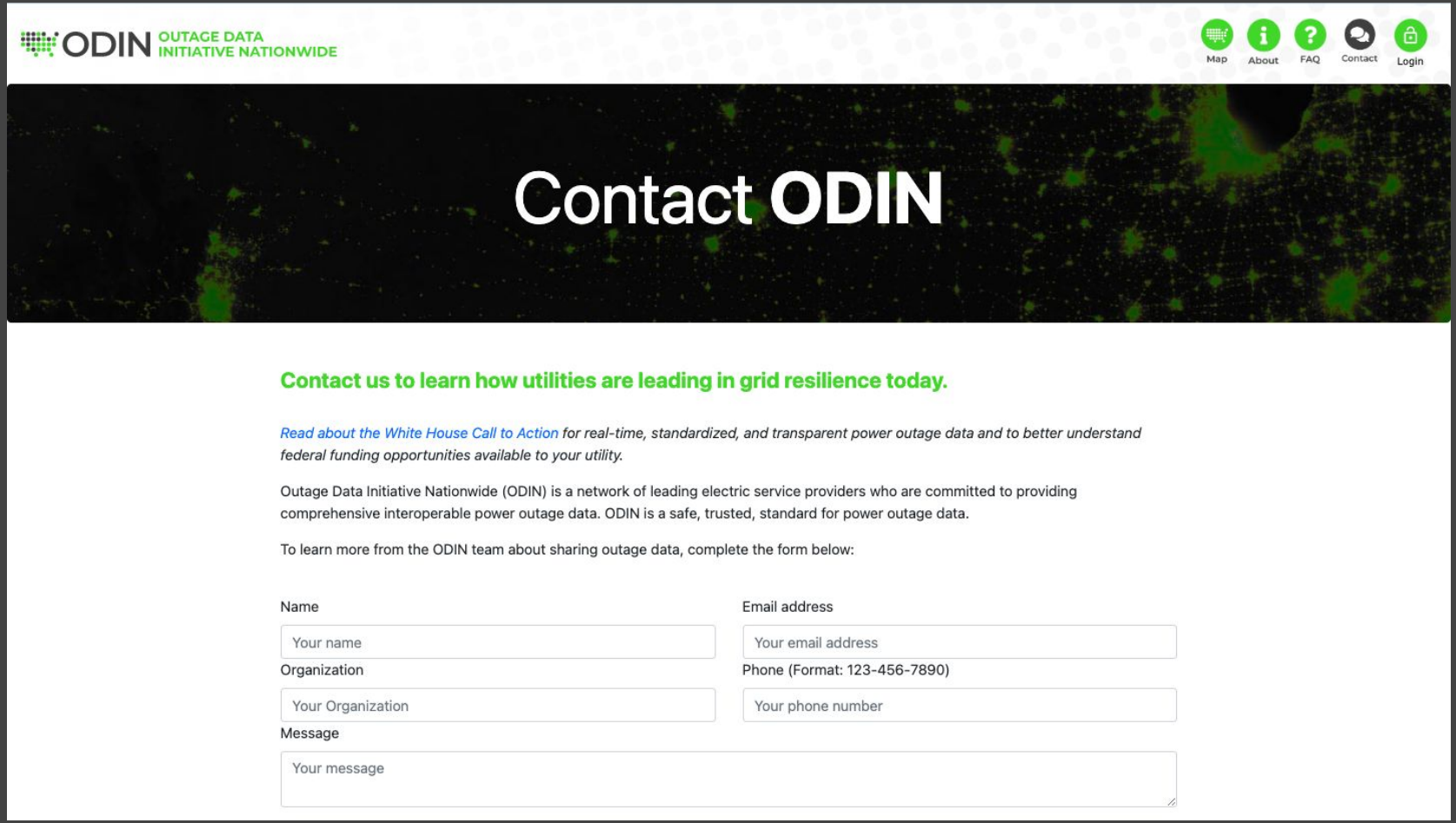
ODIN OUTAGE DATA INITIATIVE NATIONWIDE



https://odin.ornl.gov/pages/contact.html

COMMIT TO LEAD RESILIENCE TODAY

1. Fill out and send the **Participation Letter** to ODIN
2. The ODIN team will schedule a 30-minute kickoff meeting, if needed
3. Within 2 weeks, project implementation and testing begins

VISIT ODIN.ORNL.GOV