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CEC Interoperability Efforts

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Interoperability for Load Flexibility

- Goals
  - Reduce electricity costs for electricity customers
  - Reduce GHG and other emissions
  - Improve grid reliability
- Pathway – Customer choice of load control
  - Major energy-using devices adjust energy use timing
  - May be orchestrated by energy management systems (EMS)
- Implementation (Future)
  - EMS and devices become interoperable by using a set of standards
  - CEC encourages or requires use of select standards
  - Other states and countries can use CA's examples

Interoperability Purpose & Characteristics

"The purpose of a system is what it does."

– Stafford Beer (systems theorist)

- We need effortless load flexibility (and operational constraint management)
- For customers
  - Out of the box energy management
  - Secure and private
  - Saves on energy bills
  - Low upfront cost
- For OEMs, third-parties, developers, etc.
  - Open and secure systems designed to work together
  - Systems and processes that are easy to implement and use
  - The same soft- and hardware works across OEMs/devices

Efficiency Division

Interoperability Efforts

- MIDAS price server – Electricity prices, GHG, and Flex Alerts
- Flexible Demand Appliance Standards – OpenADR 3 for flexible demand appliances
  - Goal: Enable automated load flexibility based on MIDAS signals without compromising comfort or device operation
  - Under the control of the consumer – daily/permanent opt-out, signal selection
- Load Management Standards – Highly Dynamic Prices (HDP) available as a rate choice and through MIDAS

MIDAS Price Server

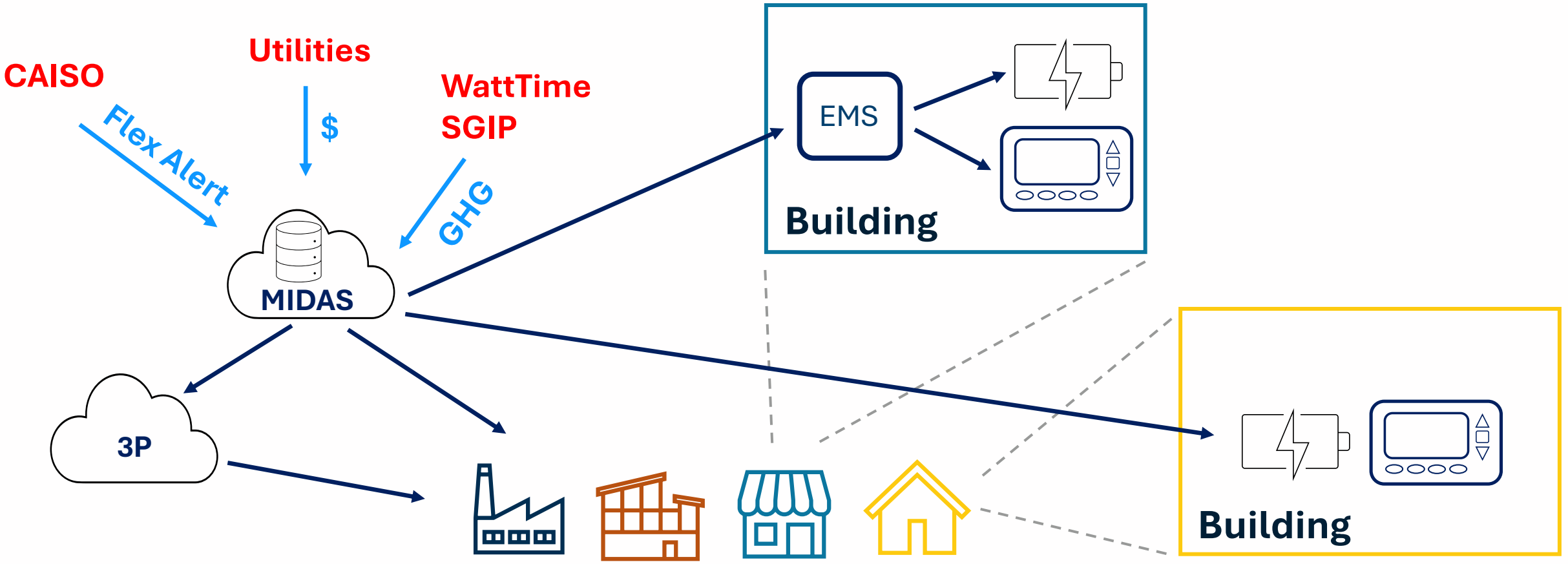
Market Informed Demand Automation Server

- MIDAS offers free and open access to electricity prices and related information
- MIDAS provides hourly/sub-hourly information
  - All time-varying electricity rates for the largest utilities and CCAs in California
  - GHG emissions from SGIP (WattTime)
  - Flex Alerts from CAISO
- OpenADR 3 compatibility*
- Free to use, no cost to user or utility
- No user or device registration
- Server → Device *and* Server → EMS → Device *and* Server → 3P → Device *and*…
- MIDAS capable of providing operational envelopes

* Forthcoming, currently in alpha testing

MIDAS Data Pathways

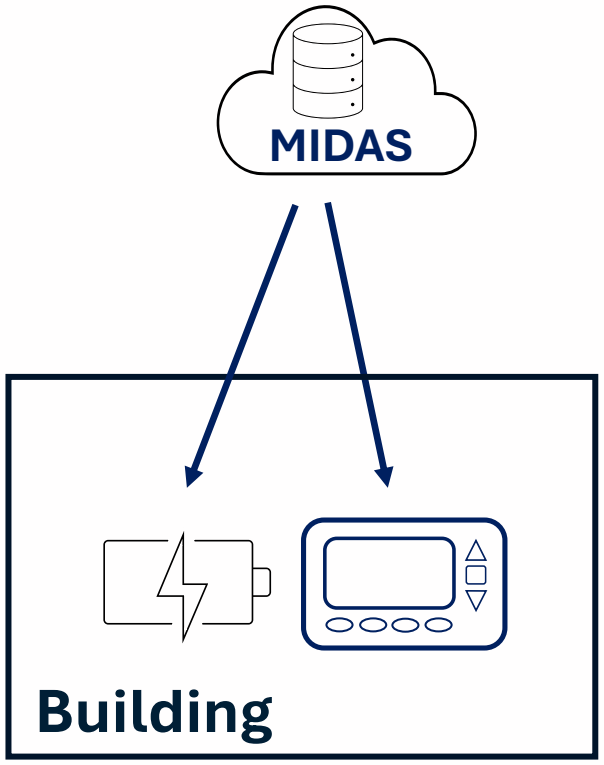
Market-Informed Demand Automation Server



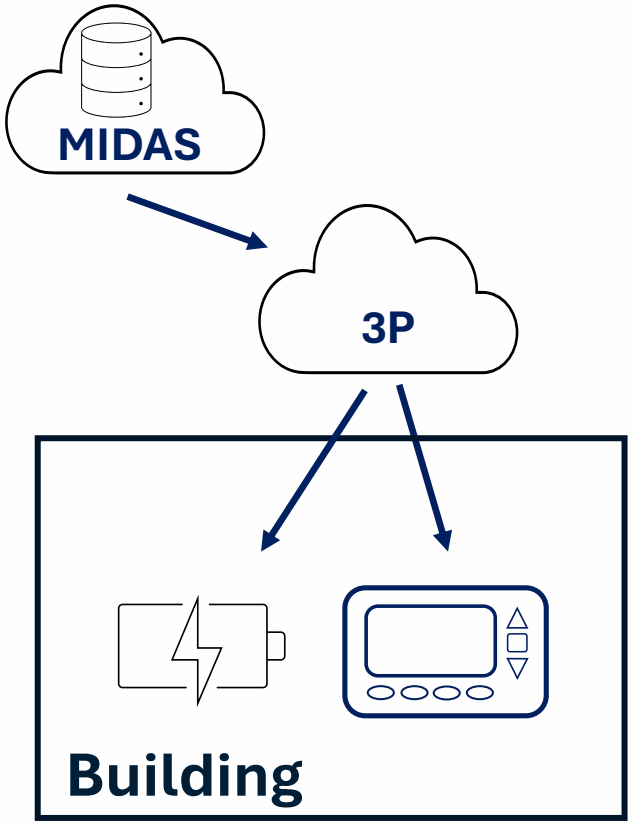
*EMS: Energy Management System; 3P: Third Party (OEM, service provider, etc.)

Device Communications Pathways

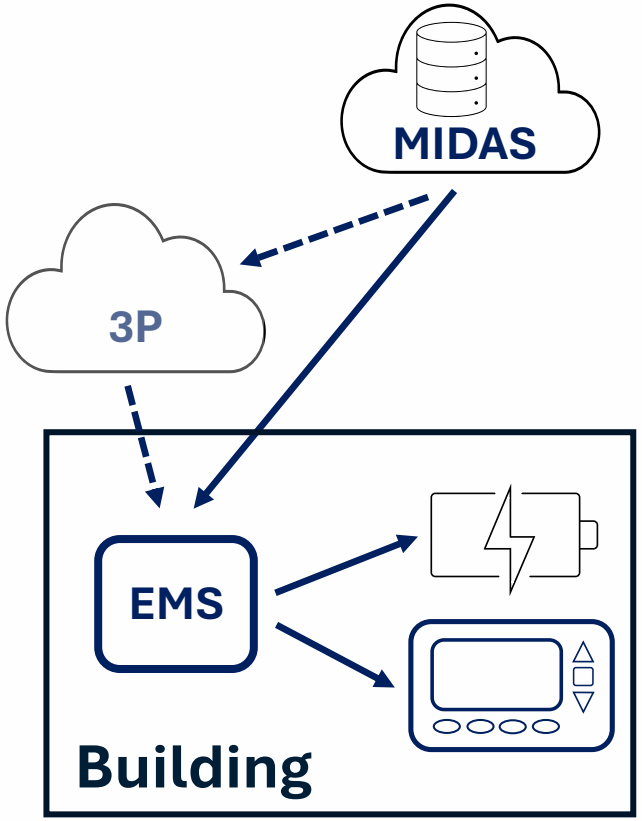
Server → Devices



Server → 3P → Devices



Server → EMS → Devices



*EMS: Energy Management System

What does Interoperability Provide?

Interoperable Communication Enables

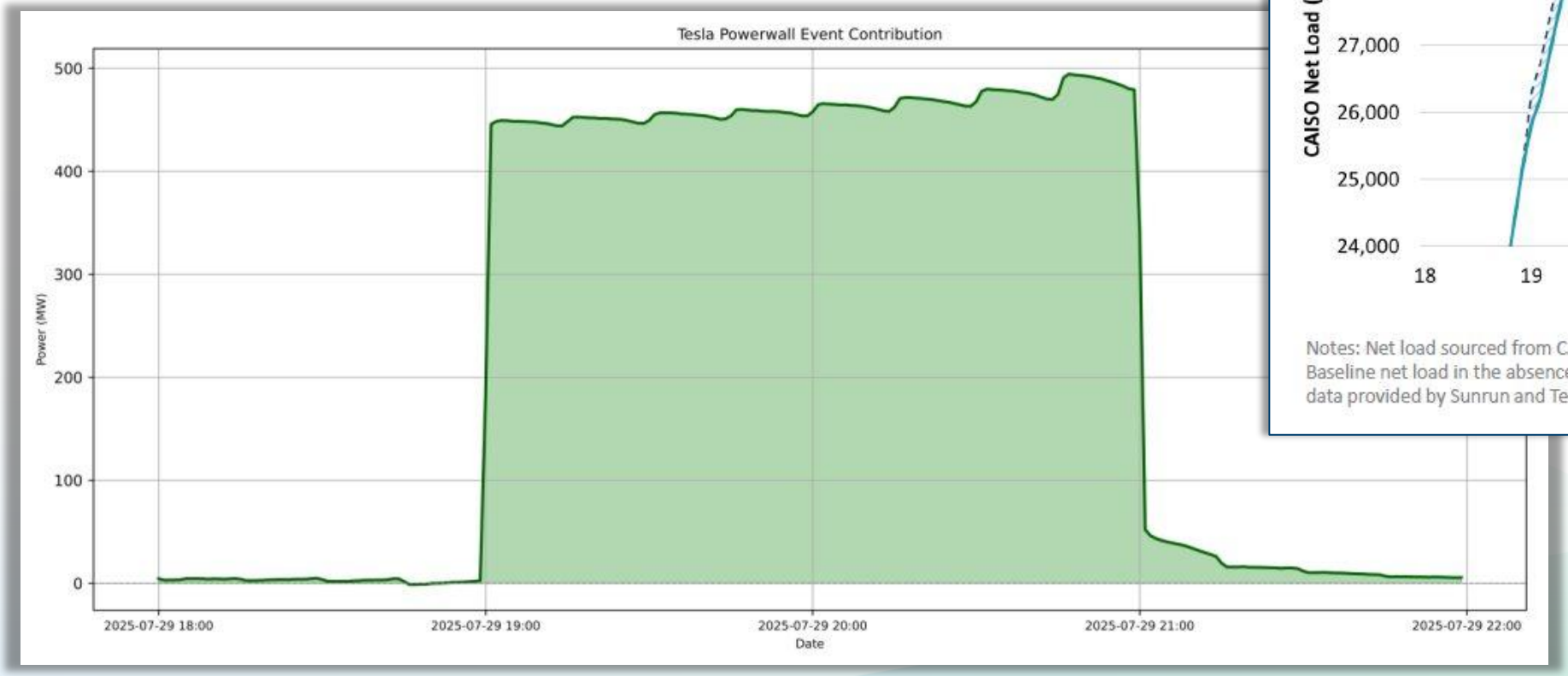
- Prices to devices – automated price and GHG responses
- Automated response to Flex Alerts and demand response events
- DR & Virtual Power Plants – faster expansion through easy device enrollment
- Energy Management System (EMS) can control many brands and types of devices
- Third-party device control on more devices at reduced cost and effort
- Devices can flex load with or without cloud access

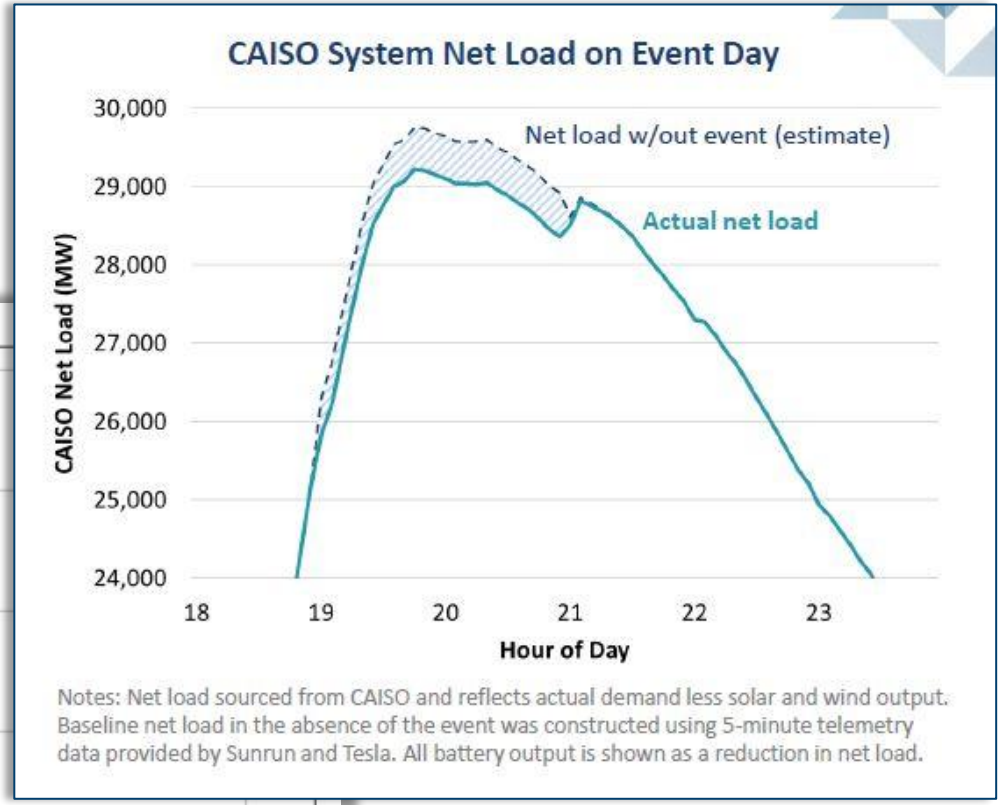
Further Information

- MIDAS
  - Webpage: Market Informed Demand Automation Server (MIDAS)
  - MIDAS documentation: GitHub - california-energy-commission/MIDAS · GitHub
  - Email: midas@energy.ca.gov
- Load Management Standards
  - Load Management Standards webpage: Load Management Standards
  - Load Management Standards email: LoadFlex@energy.ca.gov
- Flexible Demand Appliance Standards
  - Flexible Demand Appliance Standards webpage: Flexible Demand Appliances
  - Flexible Demand Appliance Standards email: flexdemandstandards@energy.ca.gov

REDDI Division Demand Side Grid Support Program
July 29, 2025 Tesla/Sunrun Test Event*

- **Joint test between Tesla/Sunrun across DSGS & ELRP at 7-9PM**
- **~535 MW* load reduction reported by Brattle (contracted by Sunrun/Tesla)**





Source: "The Demand Side Grid Support Program: An Assessment of Scale and Value" by Brattle

*Data not validated by CEC