DOCKETED	
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Project Title:	Load Management Rulemaking
TN #:	239454
Document Title:	Staff Webinar Market Informed Demand Automation Server (MIDAS) Presentation
Description:	PowerPoint presentation for the Staff Webinar Market Informed Demand Automation Server (MIDAS).
Filer:	Morgan Shepherd
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	8/25/2021 9:40:03 AM
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California Energy Commission

Market Informed Demand Automation Server (MIDAS) Webinar

Presenters: Tiffany Mateo, Karen Herter, and Morgan Shepherd

August 27, 2021

Agenda

- Introduction and Housekeeping

  Tiffany Mateo (CEC)
- Background and Purpose

  Karen Herter (CEC)
- Overview of the MIDAS Architecture

  Morgan Shepherd and David Cuffee (CEC)

Virtual Housekeeping

- Webinar conducted remotely via Zoom and is being recorded
- 3 ways to comment
  - Use the "raise hand" feature in Zoom
  - Over the telephone: dial *9 to "raise hand" and *6 to mute/unmute your phone line
  - Type your question in the Q&A window
  - Limit comment to 3 minutes
- Written comments due **September 15, 2021**
  - Submit through the e-commenting systems (19-OIR-01) at: https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=19-OIR-01
- To sign up for the list server for Load Management and Flexible Demand: https://www.energy.ca.gov/proceedings/energy-commissionproceedings/2020-load-management-rulemaking

The California Energy Commission's Market Informed Demand Automation Server (MIDAS)

August 27, 2021

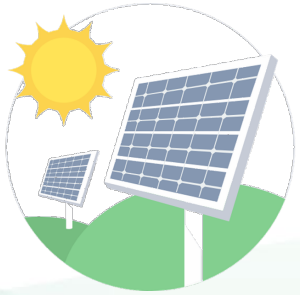
Karen Herter and Morgan Shepherd
Efficiency Division, Existing Buildings Office
California Energy Commission

California Policy Context

100% electric vehicles by 2035

100% electric buildings by 2045*

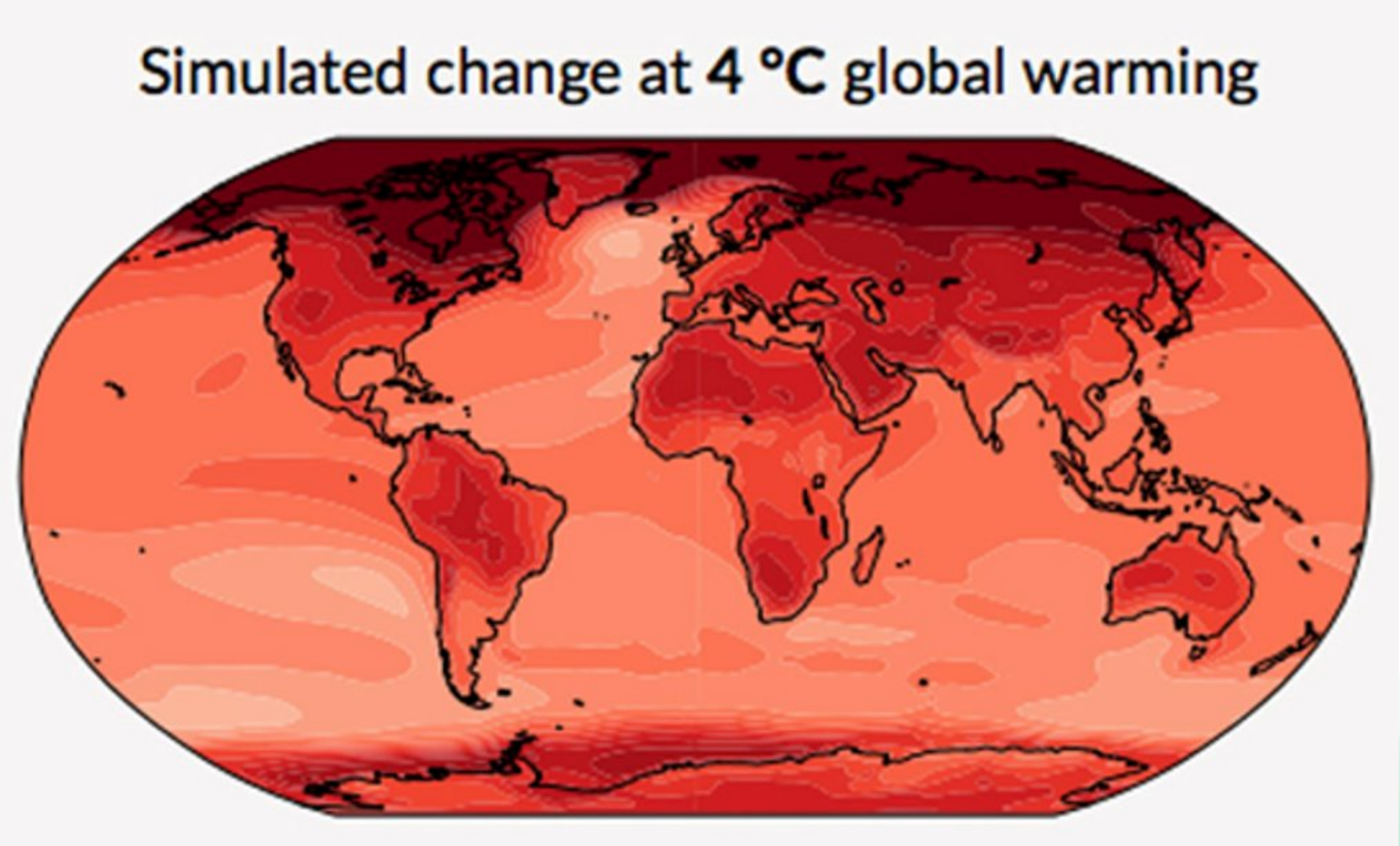
100% carbon-free electricity by 2045



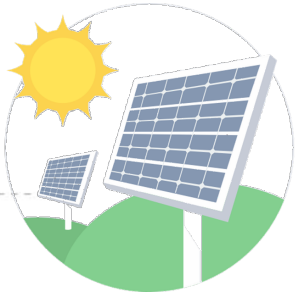
* AB 3232 analysis scenario with aggressive electrification (not legislated)

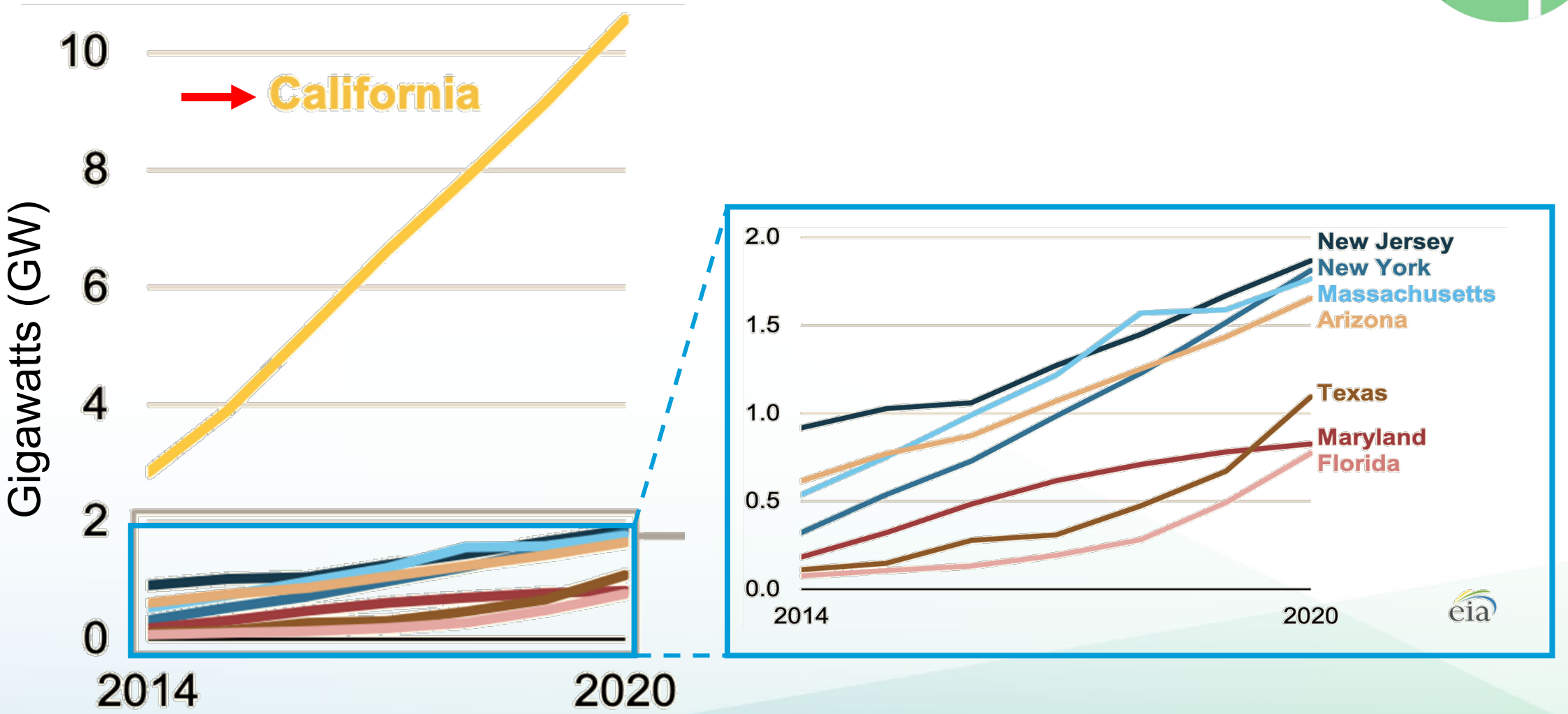
California Context

Global Context



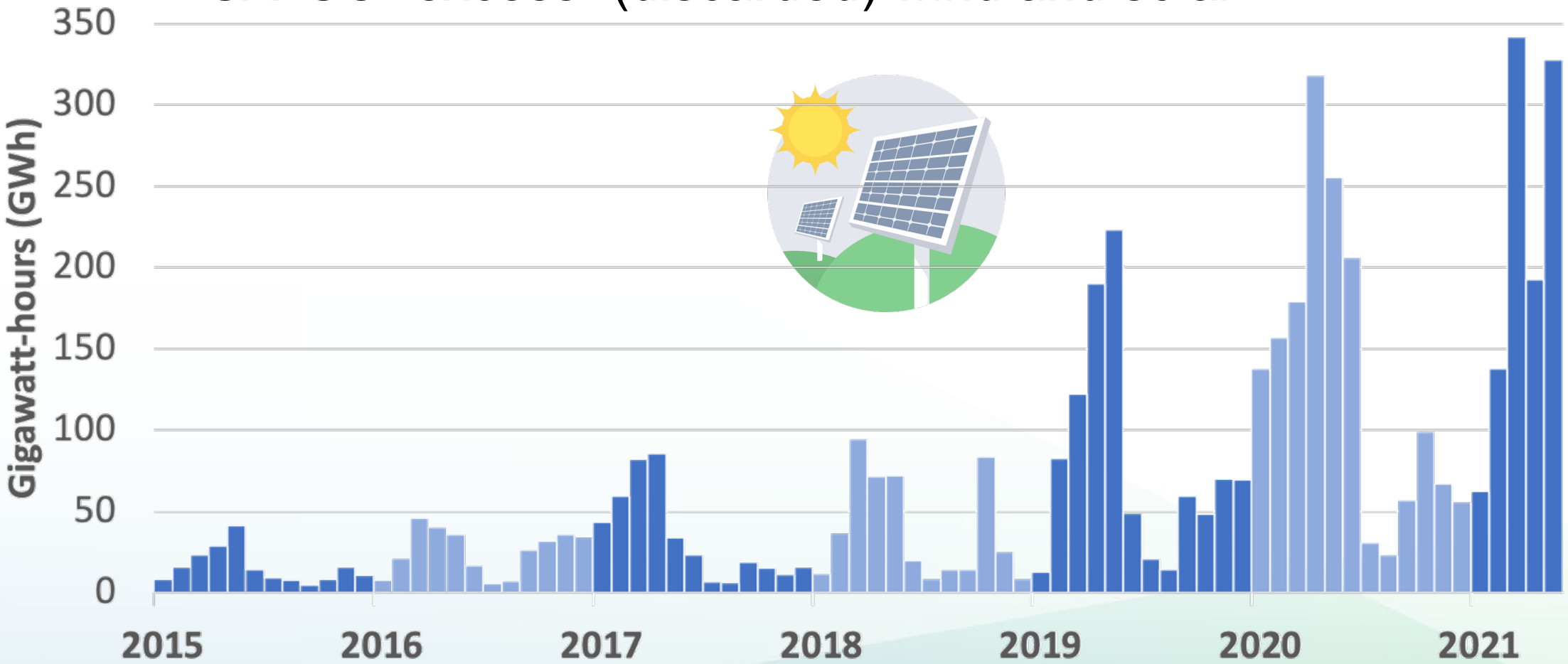
California Solar Installation





California Renewable Curtailment

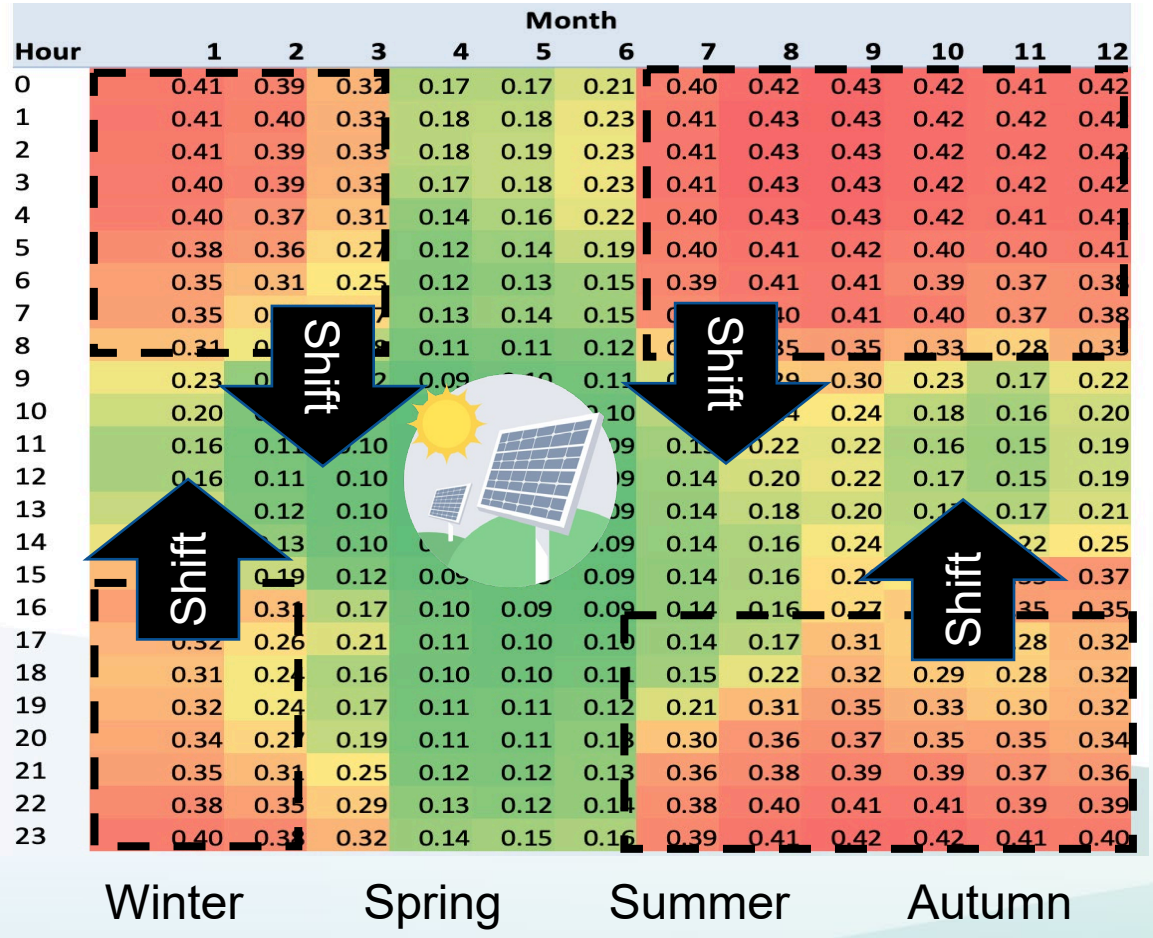
CA ISO “excess” (discarded) wind and solar



Source: CAISO 2021

Decarbonization Requires Load Shifting

2021 Hourly Marginal Emissions Intensity (MT CO_2/MWh)



Shift electricity use from dirty hours…

…to clean hours

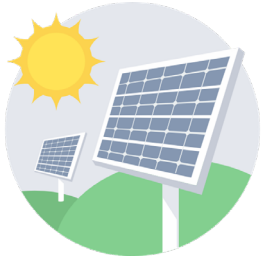
(charge, heat, cool, pump: 9am to 3pm)

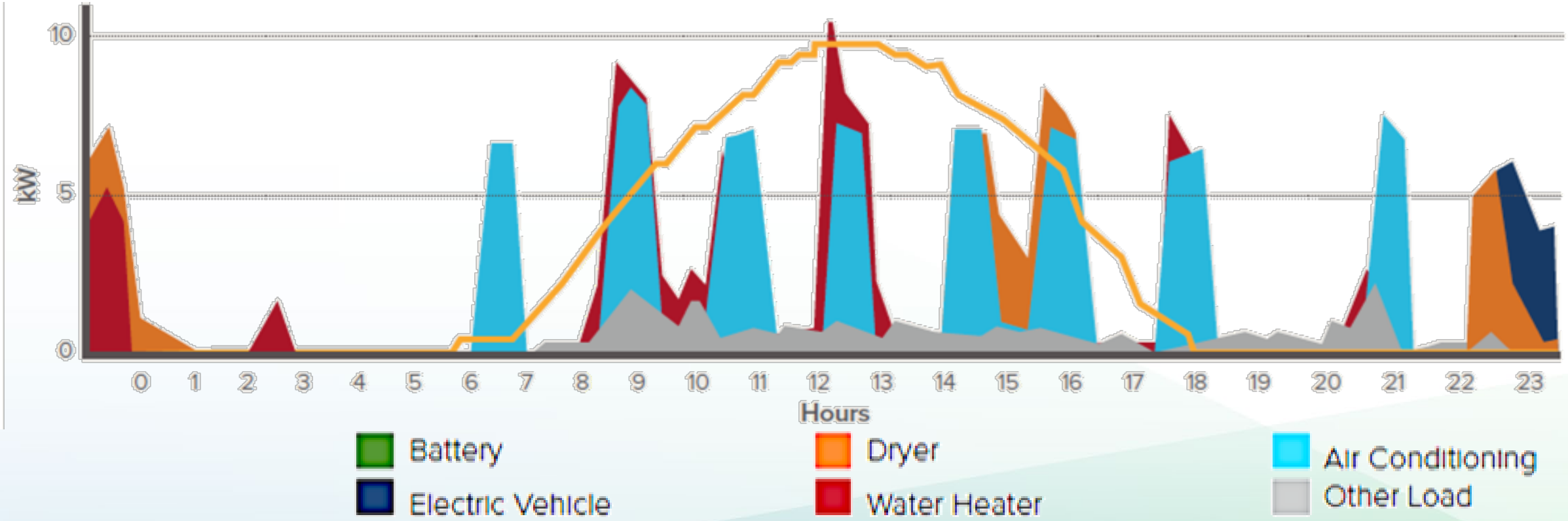
HOW?

Reschedule default run-times by responding to price/GHG signals

Source: Angela Tanghetti, CEC

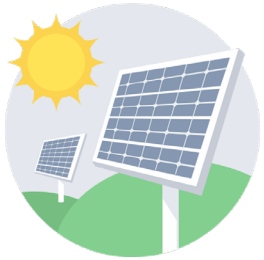
Uncontrolled Load Profile

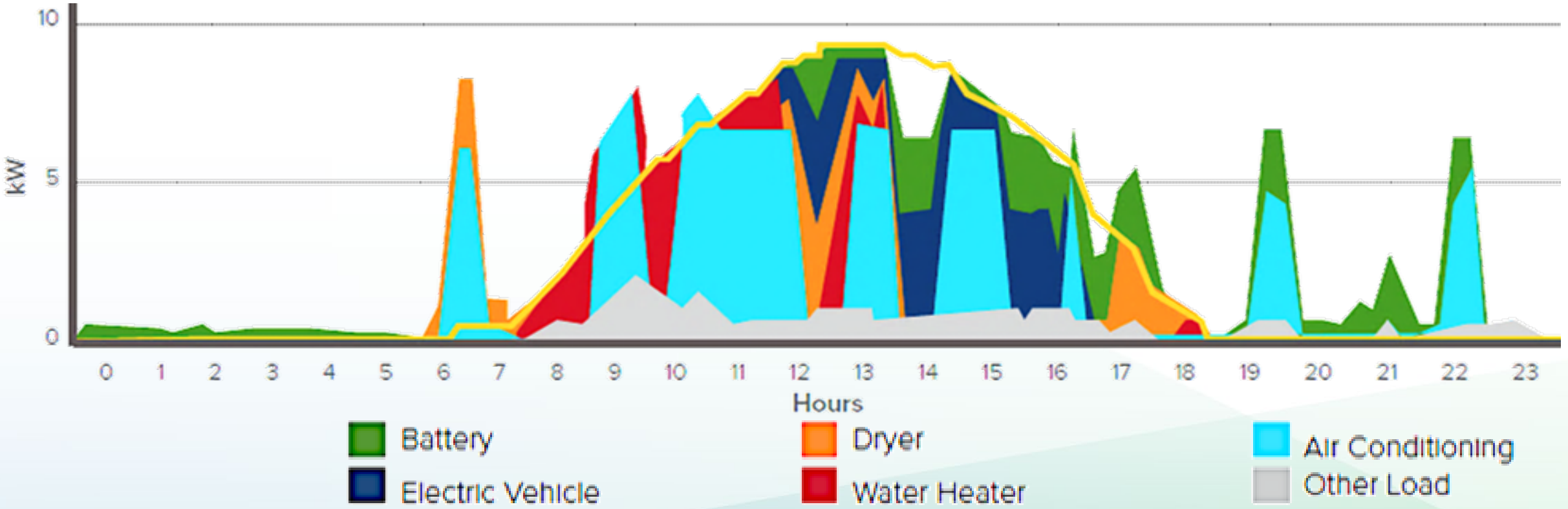




Source: RMI 2018

Flexible Load Profile

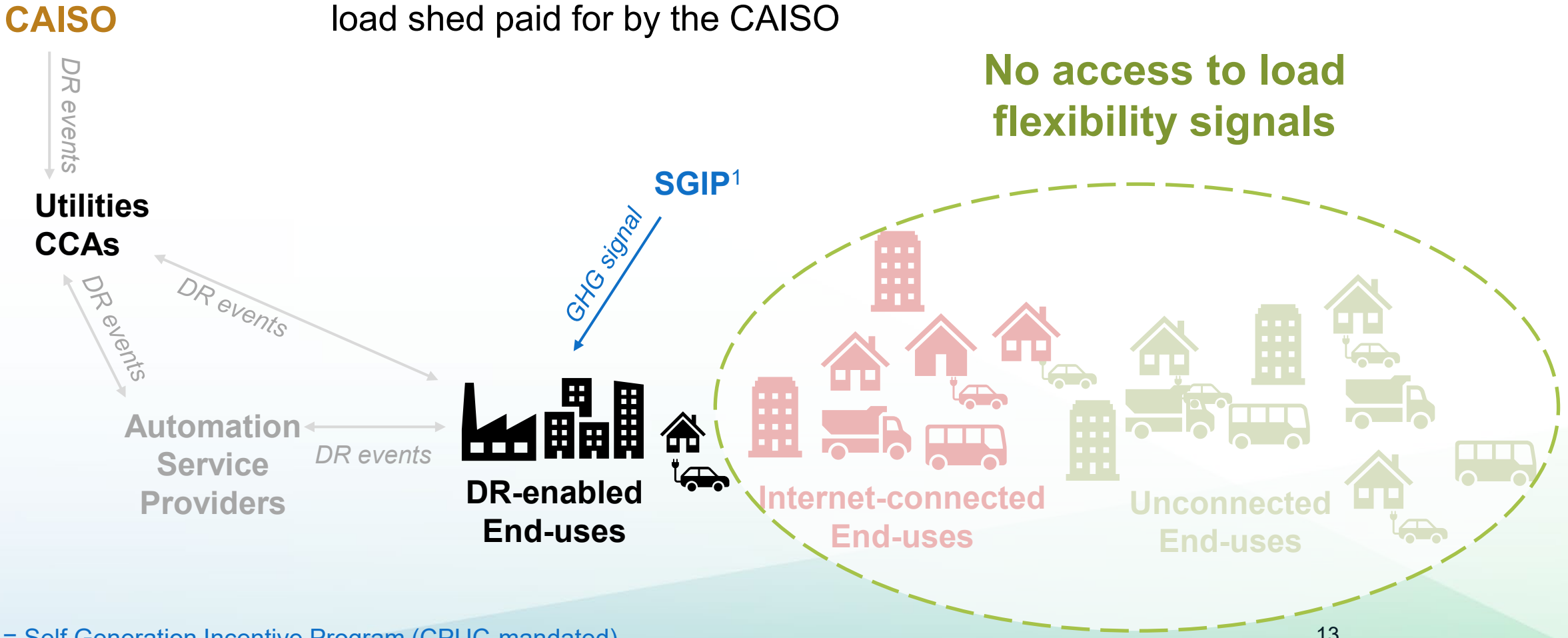




Source: RMI 2018

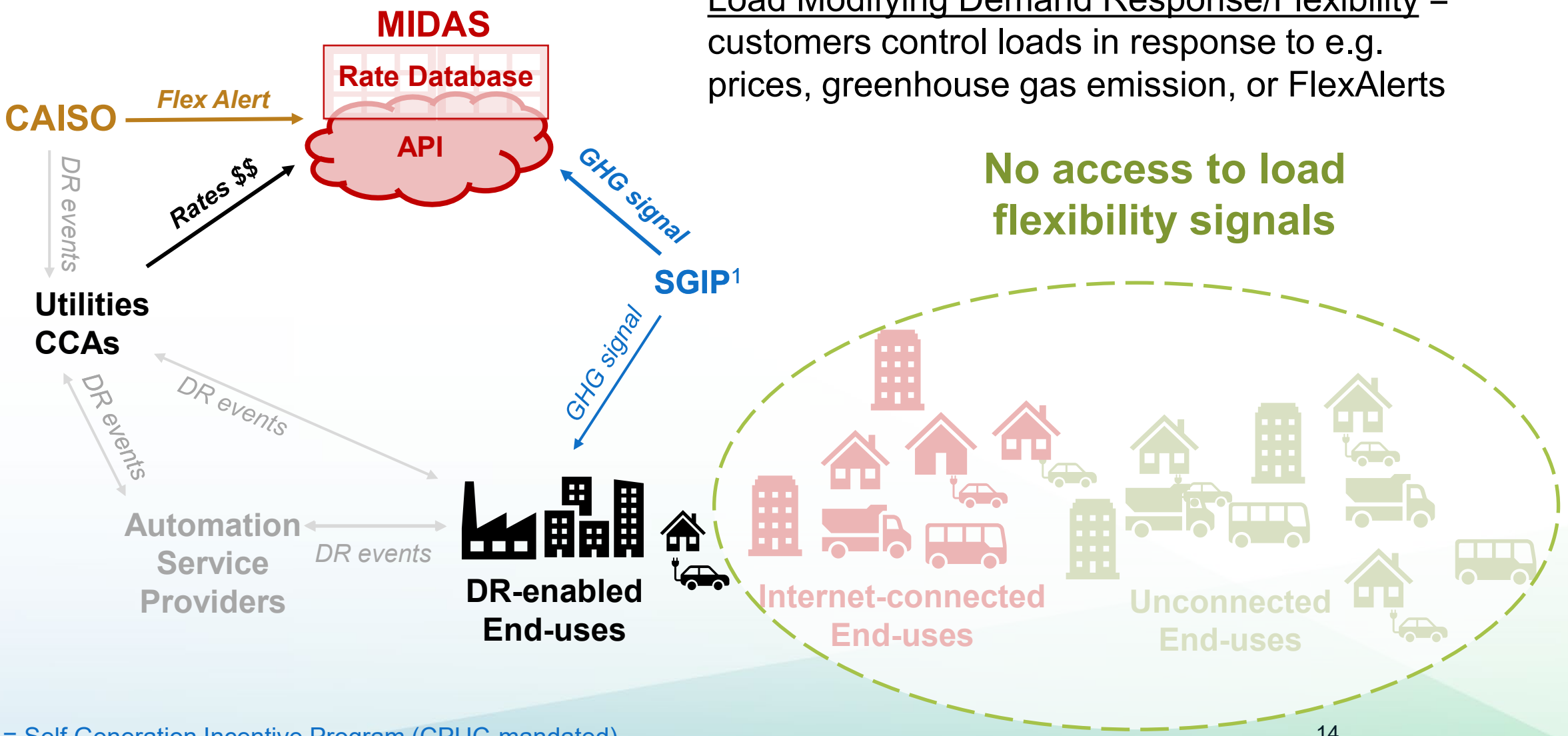
Load Management Today

Supply-Side Demand Response = DR providers initiate short term load shed paid for by the CAISO



[1] SGIP = Self Generation Incentive Program (CPUC-mandated)

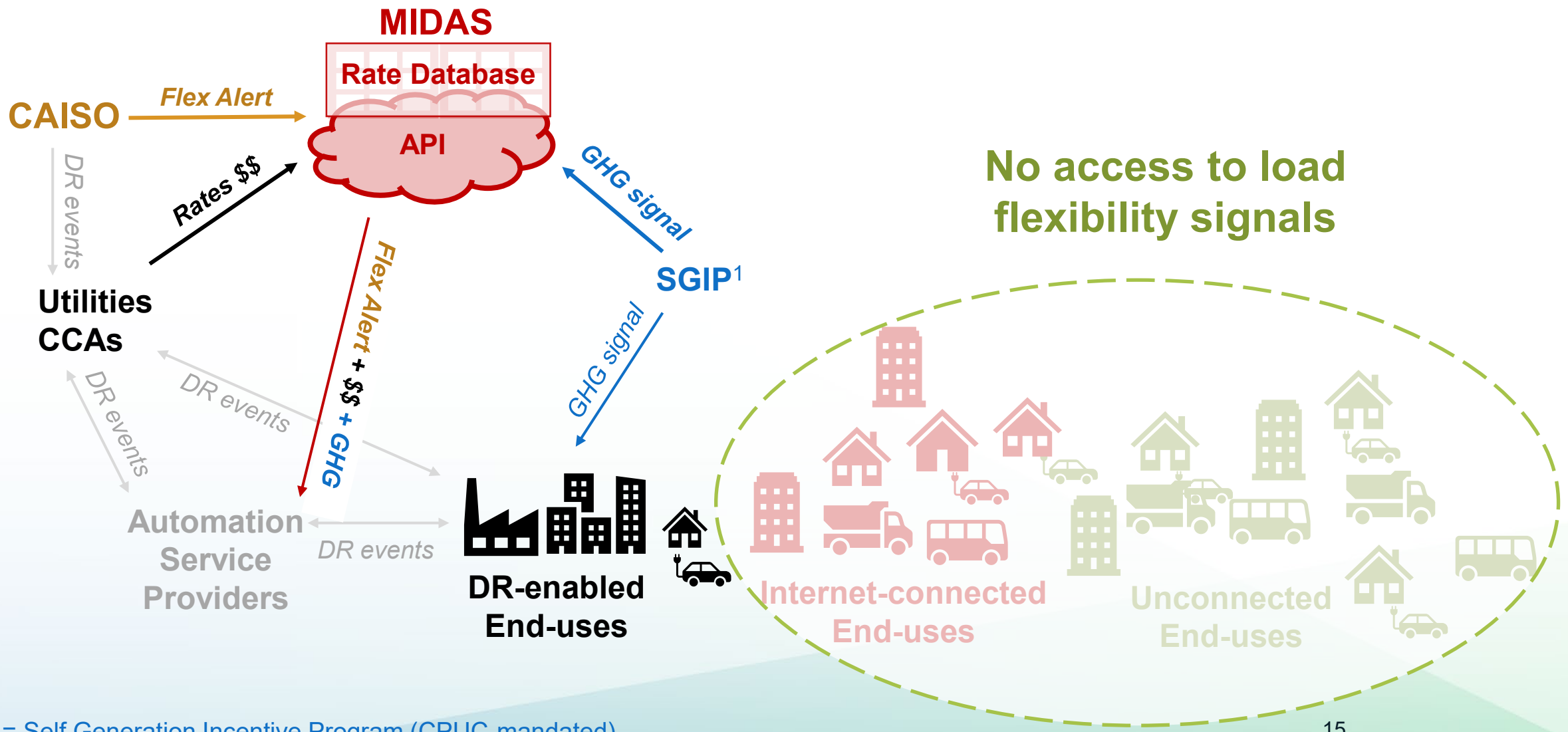
Demand Flexibility with MIDAS



Load Modifying Demand Response/Flexibility = customers control loads in response to e.g. prices, greenhouse gas emission, or FlexAlerts

[1] SGIP = Self Generation Incentive Program (CPUC-mandated)

Demand Flexibility with MIDAS



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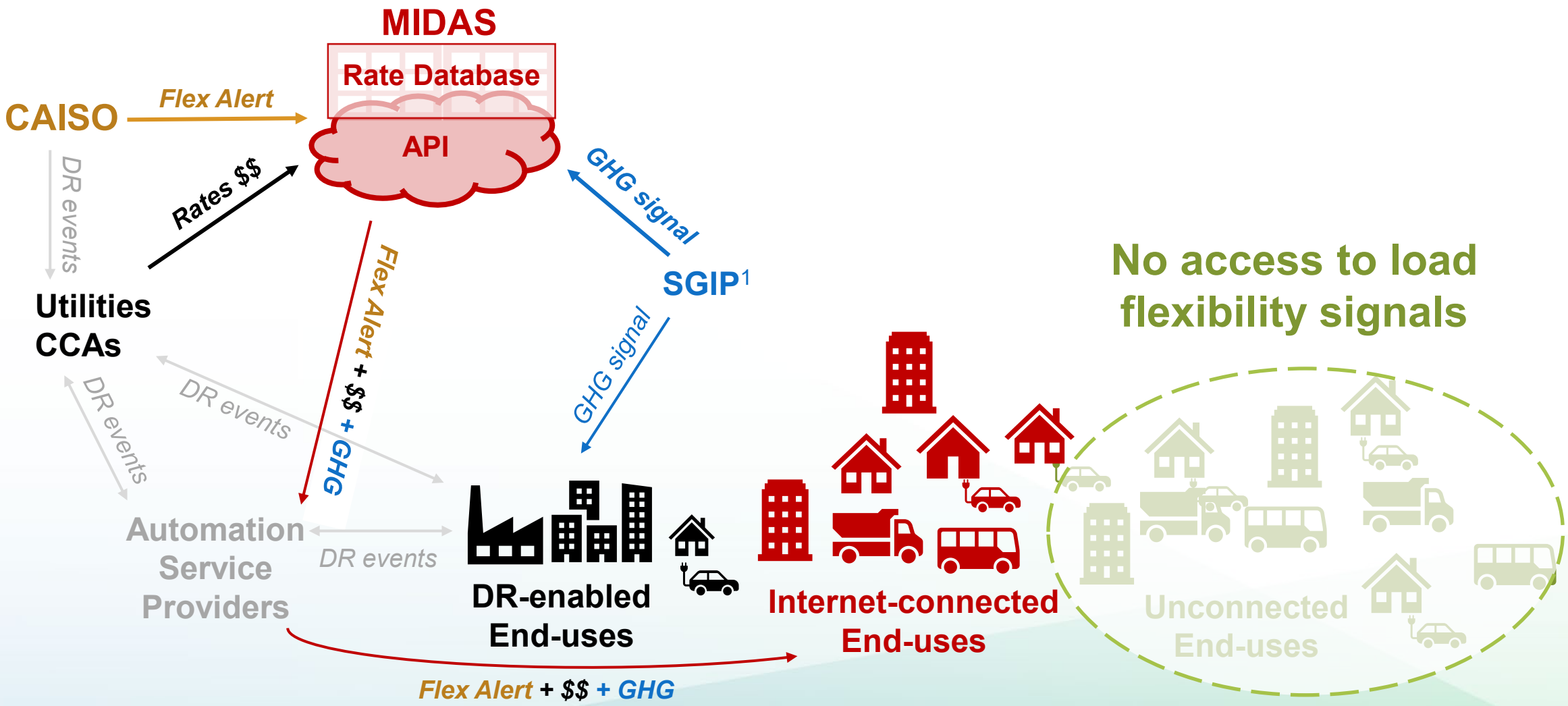
Demand Flexibility with MIDAS



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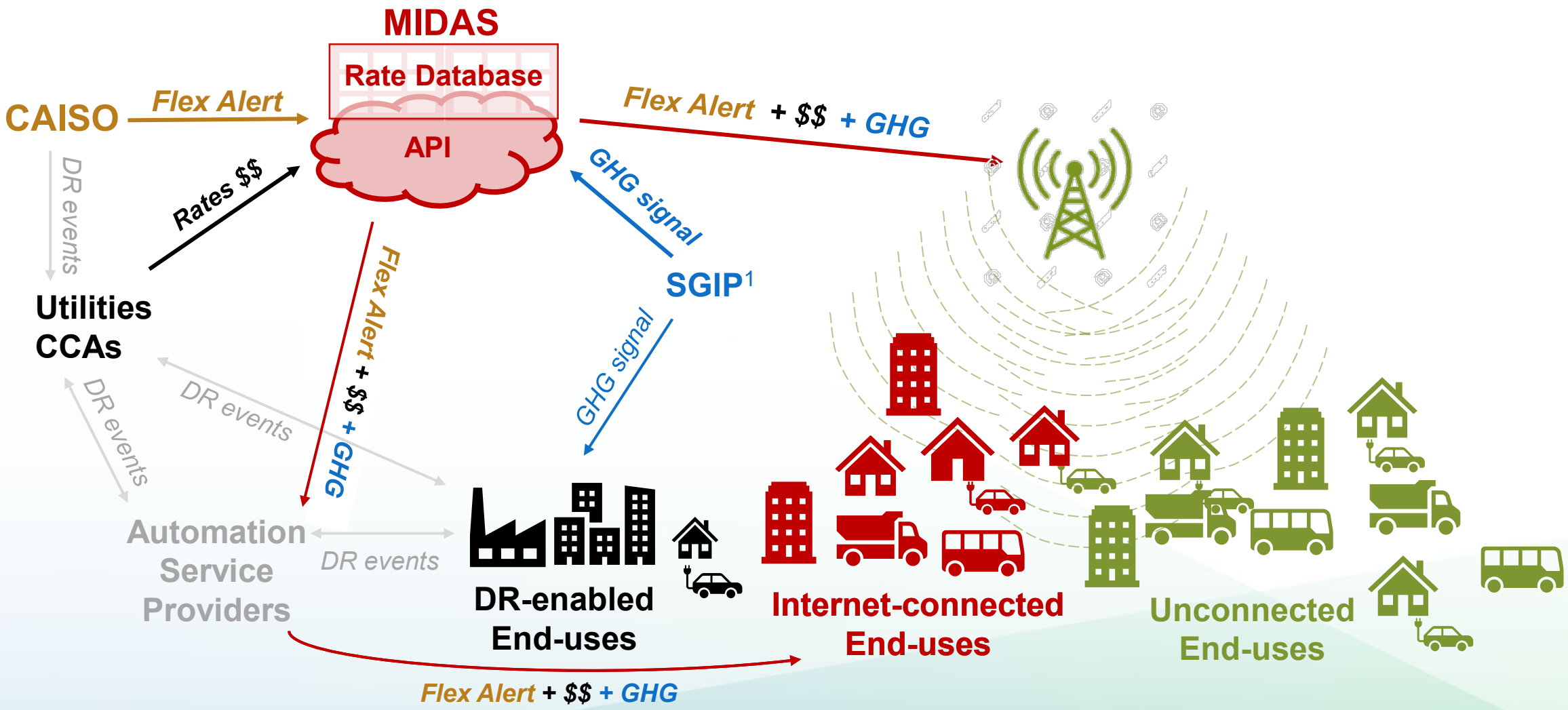
Demand Flexibility with MIDAS

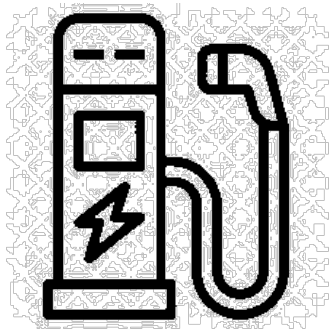


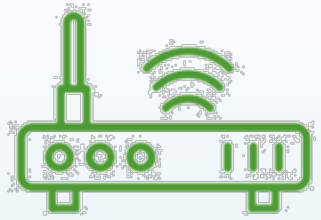
[1] SGIP = Self Generation Incentive Program (CPUC-mandated)

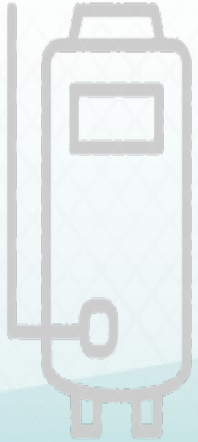
MIDAS for Residential Customers

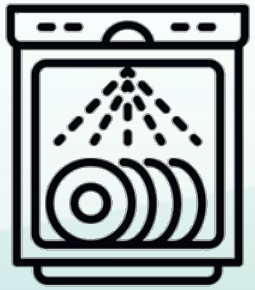
Set response preferences via connected device apps

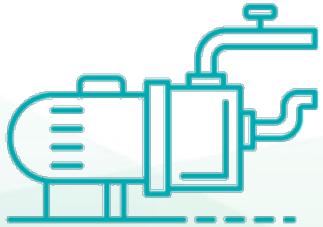
- Thermostats
- Water heaters
- Pool pumps
- EV charging
- Connected large appliances
- Home gateways







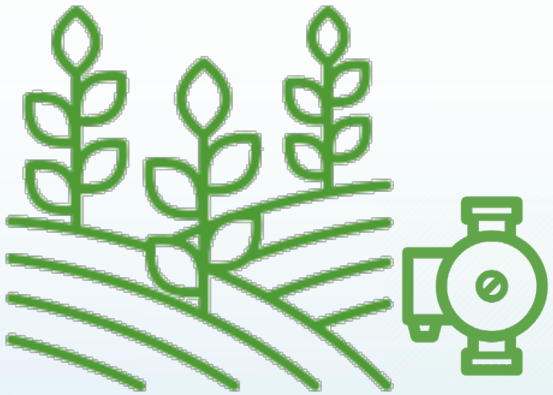


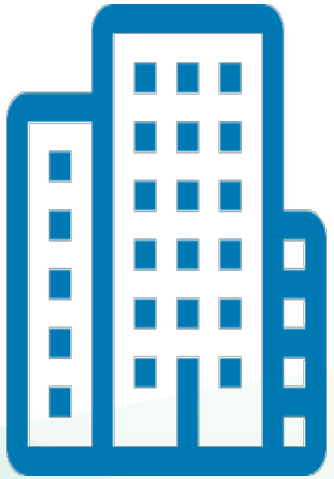


MIDAS for Business Customers

Set response preferences via energy management systems

- Reschedule industrial processes
- Precool large buildings
- Shift agricultural pumping



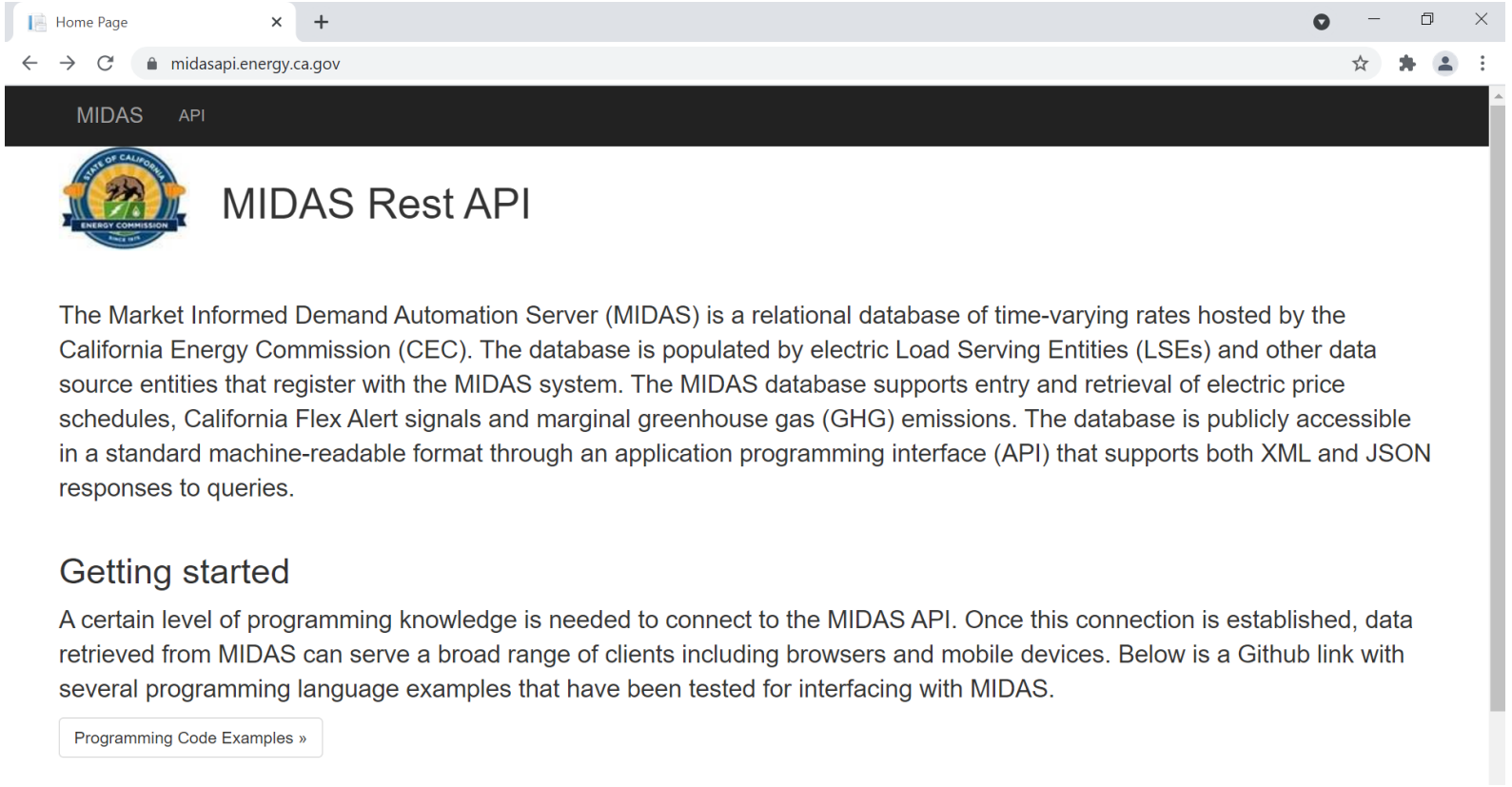


Rates in Limited Version

Distribution Company	Commercial Industrial Agricultural	Residential	Residential EV	Total
PG&E	7	3		**10**
SCE	14	4		**18**
SDG&E	3	3	3	**9**
SMUD	4	1		**5**
Total	**28**	**11**	**3**	**42**

Introduction to MIDAS

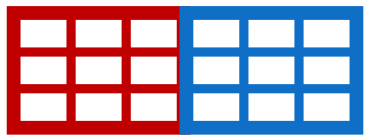
Where to find MIDAS



https://midasapi.energy.ca.gov/

CEC's MIDAS Data Model

MIDAS Rate Database



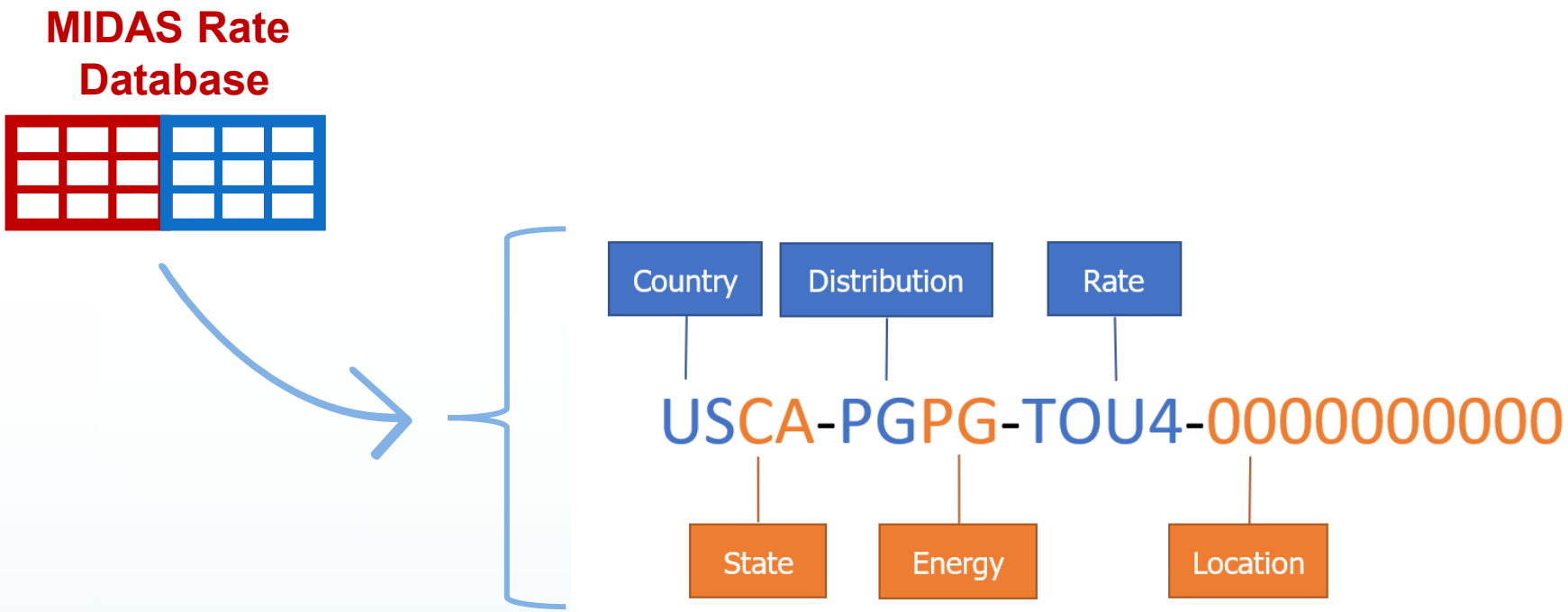
2 major tables

- RateInfo
- Value

11 minor tables

- Country (US)
- StateProvince (CA)
- Distribution (utility)
- Energy (utility or CCA)
- Location
- TimeZone
- Sector
- RateType
- DayType
- Holiday
- User

Rate Identification Number (RIN)



MIDAS RateInfo Table (part 1)

ID	CountryID	StateProvinceID	DistributionID	EnergyID	RateCode	LocationID
[GUID]	US	CA	PG	PG	AGCP	0000
[GUID]	US	CA	PG	PG	B19S	0000
[GUID]	US	CA	PG	PG	B6SP	0000
[GUID]	US	CA	PG	PG	BEV1	0000
[GUID]	US	CA	PG	PG	EV2A	0000
[GUID]	US	CA	PG	PG	TA1B	0000
[GUID]	US	CA	PG	PG	TA6B	0000
[GUID]	US	CA	PG	PG	E19S	0000
[GUID]	US	CA	PG	PG	TOUC	0000
[GUID]	US	CA	PG	PG	TOUD	0000

(table continued on next slide)

MIDAS RateInfo Table (part 2)

RateName	RateTypeID	SectorID	TimeZoneID	API	RatePlanURL
AG-C Primary	T-D	CIA	PST	TBD	https://www.pge.com
B-19 Secondary	T-D	CIA	PST	TBD	https://www.pge.com
B-6 Single Phase	TOU	CIA	PST	TBD	https://www.pge.com
BEV-1	TOU	CIA	PST	TBD	https://www.pge.com
EV2-A	TOU	Res	PST	TBD	https://www.pge.com
A-1	TOU	CIA	PST	TBD	https://www.pge.com
A-6	TOU	CIA	PST	TBD	https://www.pge.com
E-19 Secondary	T-D	CIA	PST	TBD	https://www.pge.com
ETOUC Tier1	TOU	Res	PST	TBD	https://www.pge.com
ETOUD	TOU	Res	PST	TBD	https://www.pge.com

MIDAS Value Table

RateLookupID	DateStart	DateEnd	DayType Start	DayType End	TimeStart	TimeEnd	Value	Unit	PriceName
USCA-PGPG-AGCP-0000	06/01/21	9/30/2021	1	8	0:00:00	16:59:59	0.14048	$/kWh	Summer Off-Peak
USCA-PGPG-AGCP-0000	06/01/21	9/30/2021	1	8	17:00:00	19:59:59	17.6900	$/kW	Max Peak Demand Summer
USCA-PGPG-AGCP-0000	06/01/21	9/30/2021	1	8	17:00:00	19:59:59	0.17992	$/kWh	Summer Peak
USCA-PGPG-AGCP-0000	06/01/21	9/30/2021	1	8	20:00:00	23:59:59	0.14048	$/kWh	Summer Off-Peak
USCA-PGPG-AGCP-0000	10/1/2021	5/31/2022	1	8	0:00:00	16:59:59	0.12644	$/kWh	Winter Off-Peak
USCA-PGPG-AGCP-0000	10/1/2021	5/31/2022	1	8	17:00:00	19:59:59	0.15213	$/kWh	Winter Peak

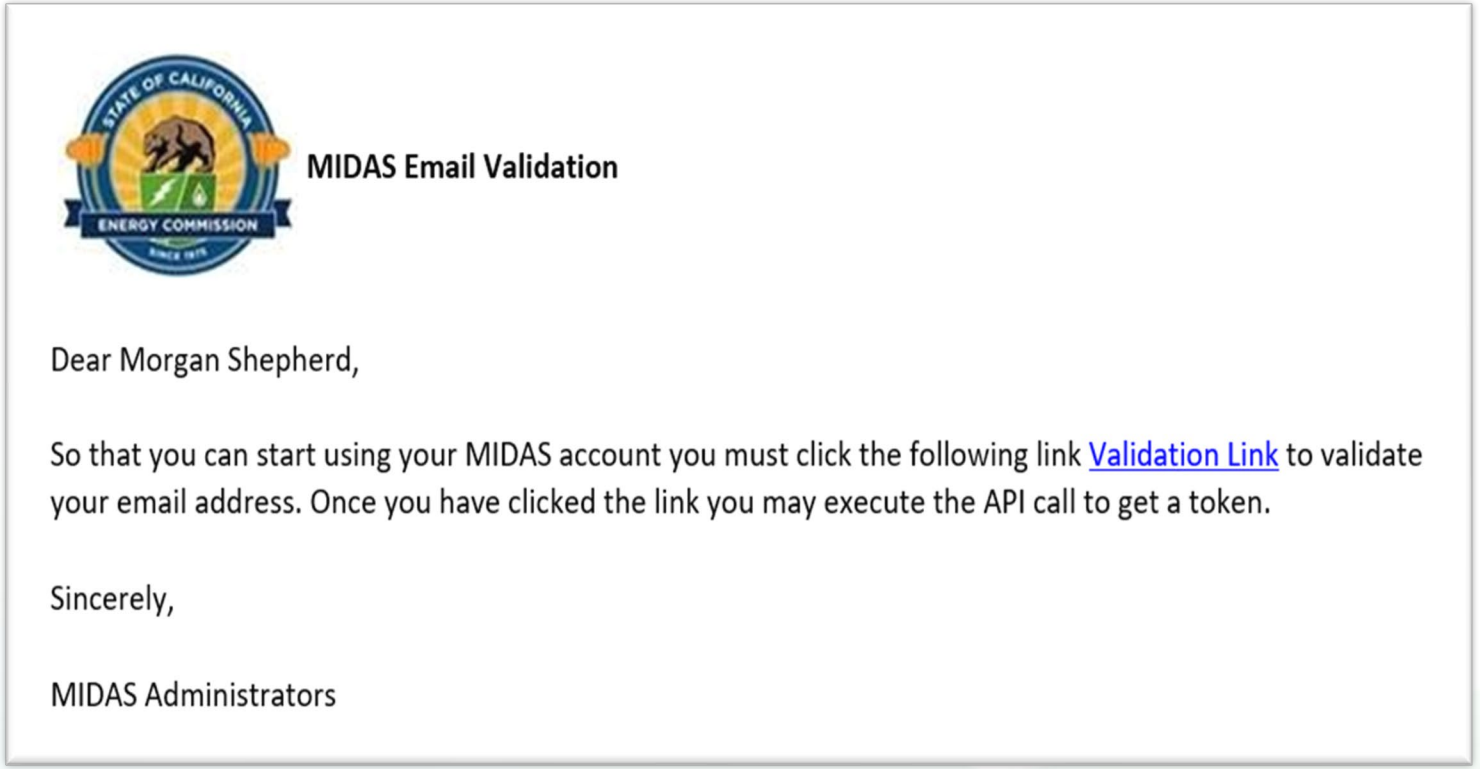
Machine-Readable Output


```
<?xml version="1.0"?>
- <RateInformation xmlns="http://schemas.datacontract.org/2004/07/MIDAS_Api.Models"
instance">
    <API_Url/>
    <EndUse>Electric Vehicle</EndUse>
  - <PriceInformation>
    - <PriceData>
        <DateEnd>2021-09-30</DateEnd>
        <DateStart>2021-06-01</DateStart>
        <DayEnd>Holiday</DayEnd>
        <DayStart>Monday</DayStart>
        <Price>0.4792500</Price>
        <PriceName>Summer Peak</PriceName>
        <TimeEnd>20:59</TimeEnd>
        <TimeStart>16:00</TimeStart>
        <Unit>KWH</Unit>
      </PriceData>
    - <PriceData>
        <DateEnd>2021-09-30</DateEnd>
        <DateStart>2021-06-01</DateStart>
        <DayEnd>Holiday</DayEnd>
        <DayStart>Monday</DayStart>
```


Example rate information in XML

Using the MIDAS

1. How to Register and Different Accounts
2. Get a Token
3. Get Values
4. Upload and Post Values



MIDAS Email Validation

Dear Morgan Shepherd,

So that you can start using your MIDAS account you must click the following link Validation Link to validate your email address. Once you have clicked the link you may execute the API call to get a token.

Sincerely,

MIDAS Administrators

Acknowledgements

MIDAS Development Team

Karen Herter, ED
Technical Lead,
Ideation & Design

David Cuffee, IT
Development &
Implementation

Morgan Shepherd, ED
Technical Support &
Documentation

Aparna Menon, ED
Beta Testing &
Technical Support

CEC Support

Commission Andrew McAllister

Michael Sokol, ED

Jennifer Nelson, ED

Gavin Situ, ED

Tiffany Mateo, ED

Troy Dorai, ED

Tisha Wong, IT

Pat McAuliffe, ERDD

David Hungerford, ERDD

Laurie Ten Hope, ERDD

Matt Fung, ERDD

Noel Crisostomo, FTD

Beta Testing

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Energy Coalition	Christina Vanciu
eRadio	Dan Nephin
Grounded Analytics	Stefanie Wayland
Harvest Thermal	Pieter Noordam
Home Energy Analytics	Steve Schmidt
LBNL	Anand Prakash
Sentient Energy	Jenya Okuneva
SMUD	Navjit Sooch
TeMix	Bo Mi
UtilityAPI	Daniel Roesler

Questions?

Thank You!

Contact Information

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(916) 237-2538

Public Comments

- Limited to 3 minutes per comment
- To comment or ask questions
  - By computer: use the "raise hand" feature in Zoom
- Over the telephone: dial *9 to "raise hand" and *6 to mute/unmute your phone line

3-MINUTE TIMER

- Written comments due **September 15, 2021**
  - Submit through the e-commenting systems (19-OIR-01) at: https://efiling.energy.ca.gov/Ecomment/Ecomment.aspx?docketnumber=19-OIR-01
- To sign up for the list server for Load Management and Flexible Demand: https://www.energy.ca.gov/proceedings/energy-commissionproceedings/2020-load-management-rulemaking