DOCKETED	
Docket Number:	20-FDAS-01
Project Title:	Flexible Demand Appliance Standards
TN #:	244259
Document Title:	Presentation - FDAS Pool Controls Public Workshop
Description:	On JUly 19, 2022, CEC staff hosted a public workshop to present the draft staff report and proposed regulatory language for the flexible demand appliance standards for pool controls.
Filer:	Bruce Helft
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	7/29/2022 3:25:17 PM
Docketed Date:	7/29/2022

California Energy Commission

Flexible Demand Appliance Standards Workshop

Pool Controls

July 19, 2022

Agenda

Time	Topic	Presenter
9:00 AM	Welcome and Orientation	Michael Sokol, Director of Efficiency, CEC
9:05 AM	Introductory Remarks	Commissioner Andrew McAllister, CEC
9:15 AM	Framing Flexible Demand Appliance Standards	Michael Sokol, Director of Efficiency, CEC
9:25 AM	Staff Report and Proposed Regulations	Nicholaus Struven, Program Lead, CEC
10:00 AM	CPUC on Appliances and Flexible Demand	Daniel Buch, Program Manager, CPUC
10:15 AM	Respondent Panel Discussion	Bruce Helft, Moderator, CEC
11:00 AM	Public Comments	
12:00 PM	Concluding Remarks and Next Steps	Ho Hwang, Electrical Engineer, CEC
	Close of Workshop	

Remote Participation

Draft Staff Report Workshop for Pool Controls is being held remotely

For remote participation instructions go to **CEC's Flexible Demand webpage:**

https://www.energy.ca.gov/proceedings/energy-commission-proceedings/flexible-demand-appliances

Zoom: Technical support is available at https://support.zoom.us/

Use the Zoom chatbot feature, located in the lower right corner of the screen or call (888) 799-9666, ext. 2

You can contact the Public Advisor's Office via email publicadvisor@energy.ca.gov, or by phone at (916) 654-4489, or call toll free at (800) 822-6228

Meeting Guidelines

- **Opportunity for public comments** – approximately 11:00 a.m.
- Comments may be **limited to 3 minutes** per person and **1 person per organization**, depending upon the number of persons wishing to speak
- Please provide your **name and affiliation** when speaking
- All **lines are muted**, to comment – **raise hand to speak**
  - **Online: Raise your hand**, host will give you the ability to speak, then participant must push unmute
  - **Cell phone: Raise your hand by pushing *9**, host will give you the ability to speak, then caller must **push *6** to **mute and unmute**
- For clarifying questions, **type your question in the Q&A section**

Opening Introductory Comments

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Introductory Remarks

Commissioner Andrew McAllister, Ph.D.

California Energy Commission

Flexible Demand Standards - Phase One

Time	Topic	Presenter
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9:05 AM	Introductory Remarks	Commissioner Andrew McAllister, CEC
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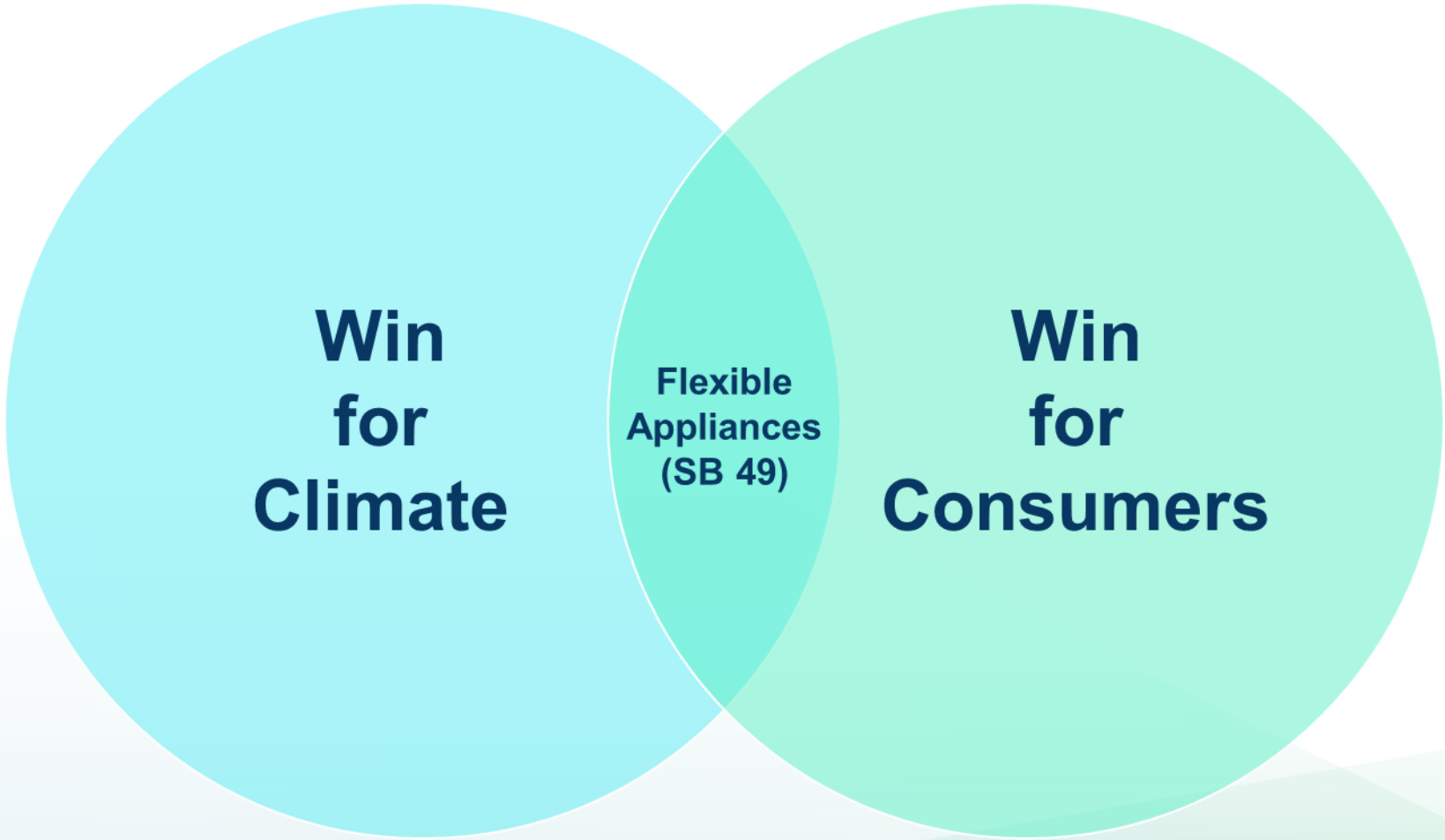
Framing Flexible Demand Appliance Standards

Michael J. Sokol, Director of Efficiency
California Energy Commission

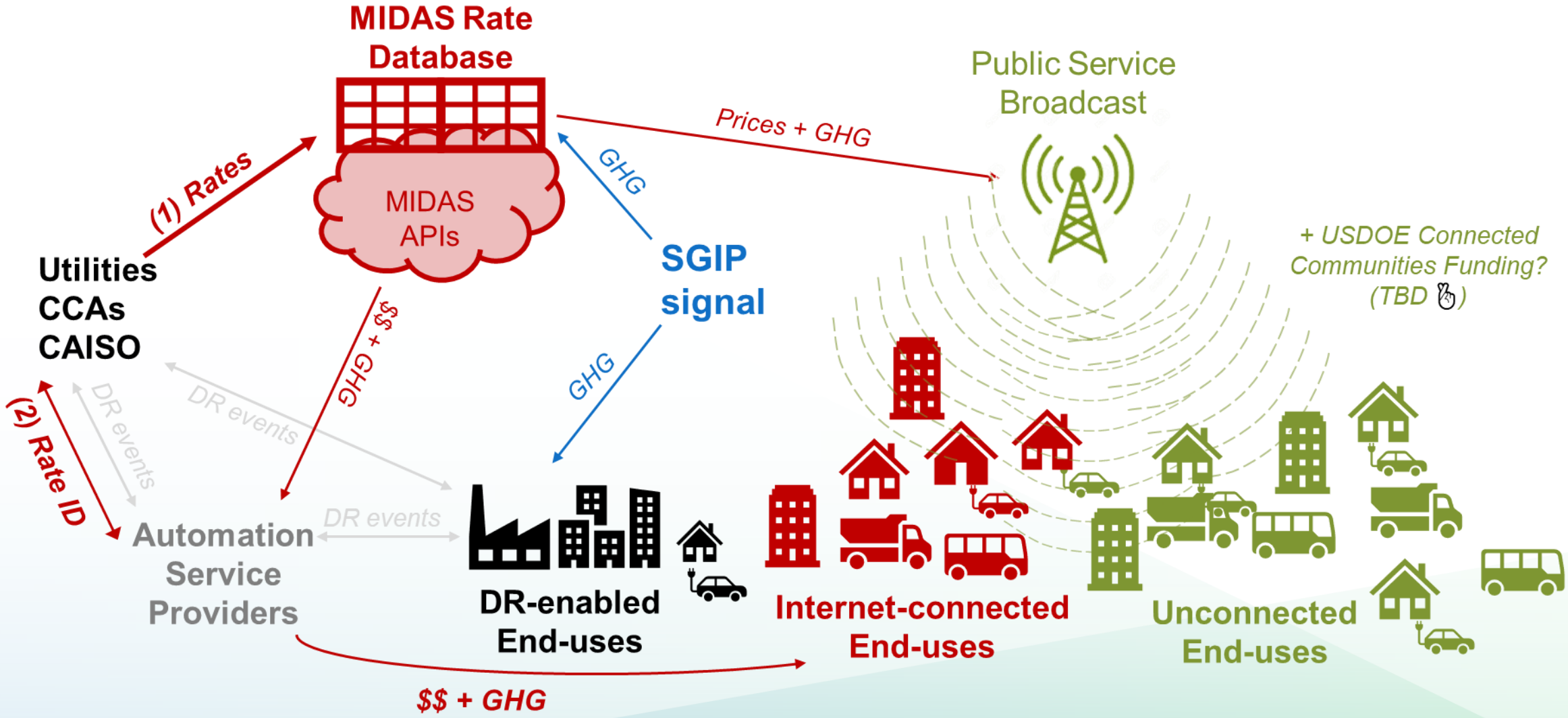
Senate Bill 49 (Skinner, 2019)

- Requires **Flexible Demand Appliance Standards** that are:
  - Cost-effective
    - Value of reduced GHG emissions
    - Contribution to grid reliability
  - Configurable, requiring consumer's consent
  - Open source and cybersecure
  - Readily available load-management technologies

Win | Win Policy Objectives for CA



Load Management, Smart Grid, Flexible Demand



[1] The CPUC's mandated Self-Generation Incentive Program (SGIP)

Pool Controls as first device

Pool Controls flexible demand standards are technically feasible and cost-effective

Phase 1	Phase 2	Phase 3
Pool Controls	Electric Storage Water Heaters	Electric Vehicle Supply Equipment
Dishwashers*	Behind the Meter Batteries	
Electric Clothes Dryers*		
Thermostats		

*To be revisited.

Report and Proposed Language

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Rulemaking Process

Nicholaus Struven
FDAS Team Lead, Efficiency Division
California Energy Commission

Pre-Rulemaking Status

Comment Period Begins
June 29, 2022

64 Days

Comment Period Ends
Aug. 31, 2022

Published Draft Staff Analysis with Draft Regulations on June 29, 2022

Hold Public Workshop on Draft Staff Analysis July 19, 2022

Staff Reviews Comments Received

Revise Staff Analysis Addressing Comments

Begin Formal Rulemaking Process

We Are Here

Goals for this Workshop

- Introduce flexible demand appliance standards
- Review staff report and proposed regulations
- Gather your ideas, concerns, and recommendations
- Written comments due **by 5:00 PM** on **August 31, 2022**

Staff Report

and

Proposed Regulations

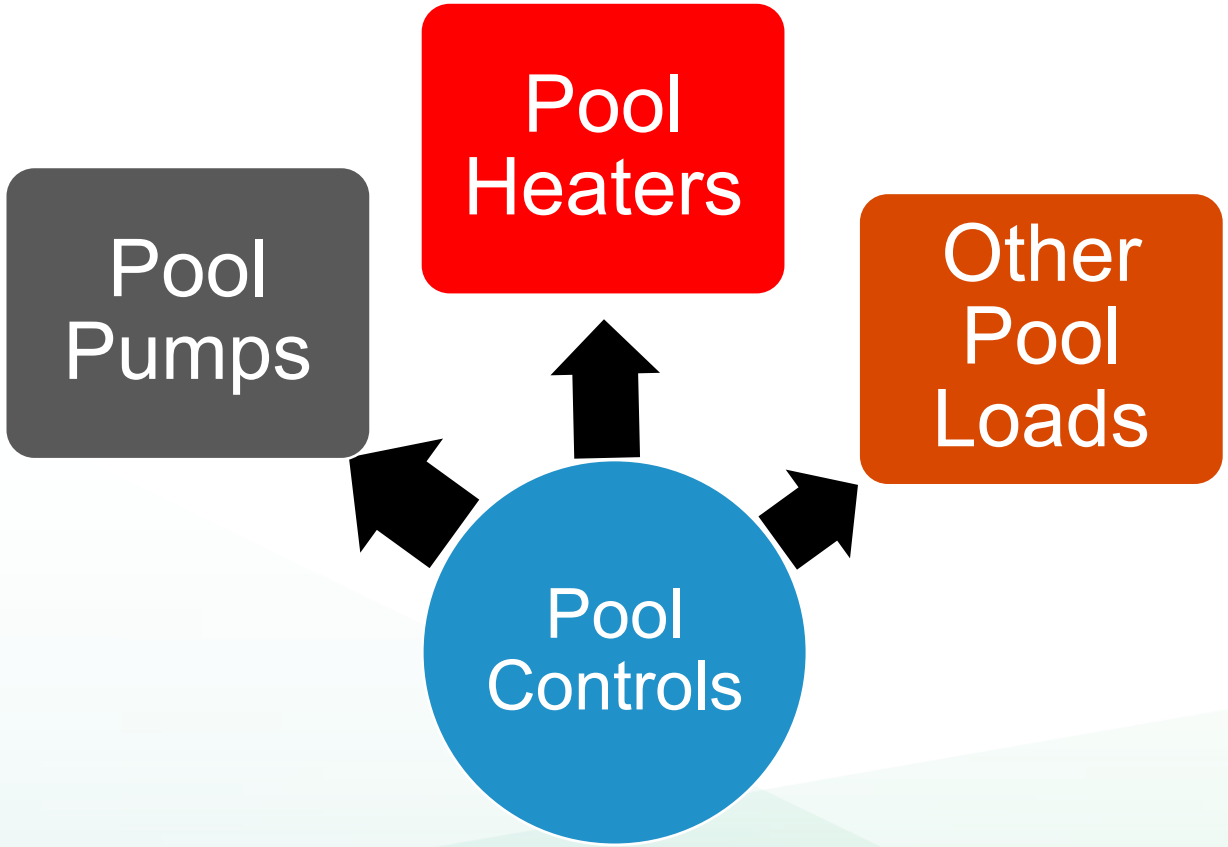
Why flexible demand standards?

- Californians asked to **Flex Your Power**
  - Schedule, shift use of appliances to other times
- Flexible demand appliances allow consumers to:
  - Flex use of electricity
  - Realize financial benefits of lower electricity rates
  - Align electricity demand with renewable supplies
  - Avoid greenhouse gas emissions

Every Californian deserves an appliance that can *FLEX*

What are pool controls?

Pool Controls: Allow owners or operators to control various aspects of pools, including filtering, temperature adjustments, and chlorination systems to keep the pool water clean, clear and safe.



Facts about Pool Controls

Equipment in Separate Enclosures

Equipment in Single Enclosure

Key Facts	
Incremental Cost Estimate	$70
Product Lifetime	10 years
CA Shipments	115,000 /year
CA Stock (2033)	1.2 million
Energy use per Pool Controller	5.5 MWh/year

Proposed Standards

- Pool Controls Draft Staff Report: https://www.energy.ca.gov/publications/2022/analysis-flexible-demand-standards-pool-controls-2022-flexible-demand-appliance
- Standards proposal in Chapter 5
- Proposed Regulatory Language in Appendix A
- Effective date is 1-year after CEC adoption

Staff seeks written comments

by 5:00 PM on August 31, 2022

Definition: Pool Control

A “Pool control” means any component or group of components that:

(1) Causes the pool filter pump and other pool equipment to start or stop operation, and

(2) Uses single-phase AC power as input power.

Pool controls exclude pool controls marketed exclusively for use as a control for pool filter pumps with a rated hydraulic horsepower (hhp) greater than 2.5 hhp.

Definition: Flexible Demand

"**Flexible demand**" means the capability to schedule, shift, or curtail the electrical demand of a load-serving entity's customer through direct action by the customer or through action by a third party, the load-serving entity, or a grid-balancing authority, with the customer's consent.

Definition: Consent

"**Consent**" means a customer's permission or agreement to use the capabilities of an appliance subject to this Article to schedule, shift, or curtail its use through direct action by the customer or by a third party, load-serving entity, or a grid-balancing authority. Consent may be express or implied.

Definition: Connected Device

"**Connected device**" means any device that is capable of receiving TCP/IP signals from the internet, with or without the connections through common home network equipment or radio broadcasting, by means of integrated or separate communications module.

Definition: TCP/IP Signal

"**TCP/IP signal**" means a type of data format used to carry data through the network.

Default Operating Schedule

The pool control shall be shipped with a default operating schedule setting that starts no earlier than 9 a.m. Pacific Standard Time (PST) and finishes no later than 3 p.m. PST for the following operations:

a. any operation of the pool filter pump at more than 50 percent of the maximum operating speed of the pool filter pump,

b. any operation of the pressure cleaner booster pump, and

c. any operation of the electric pool water heater.

Default Operating Schedule

During periods of Pacific Daylight Time (PDT) the start time of the default operating schedule shall be 8 a.m. PDT and the finish time shall be 2 p.m. PDT.

Reliability & Cybersecurity

Device Identification & Configuration

Restart Settings | Automatic Rejoin

Passwords

Software Updates

Data Protection

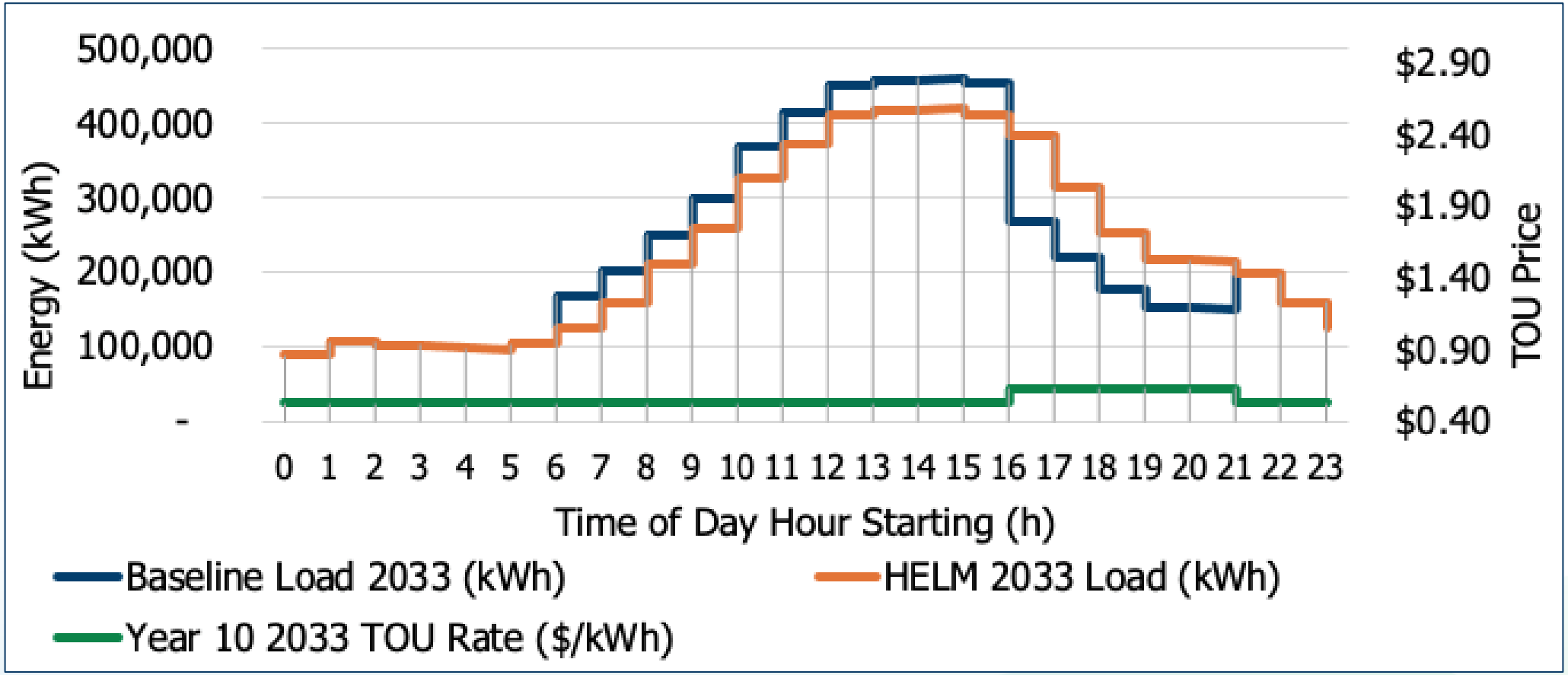
Override Function

Staff Report

and

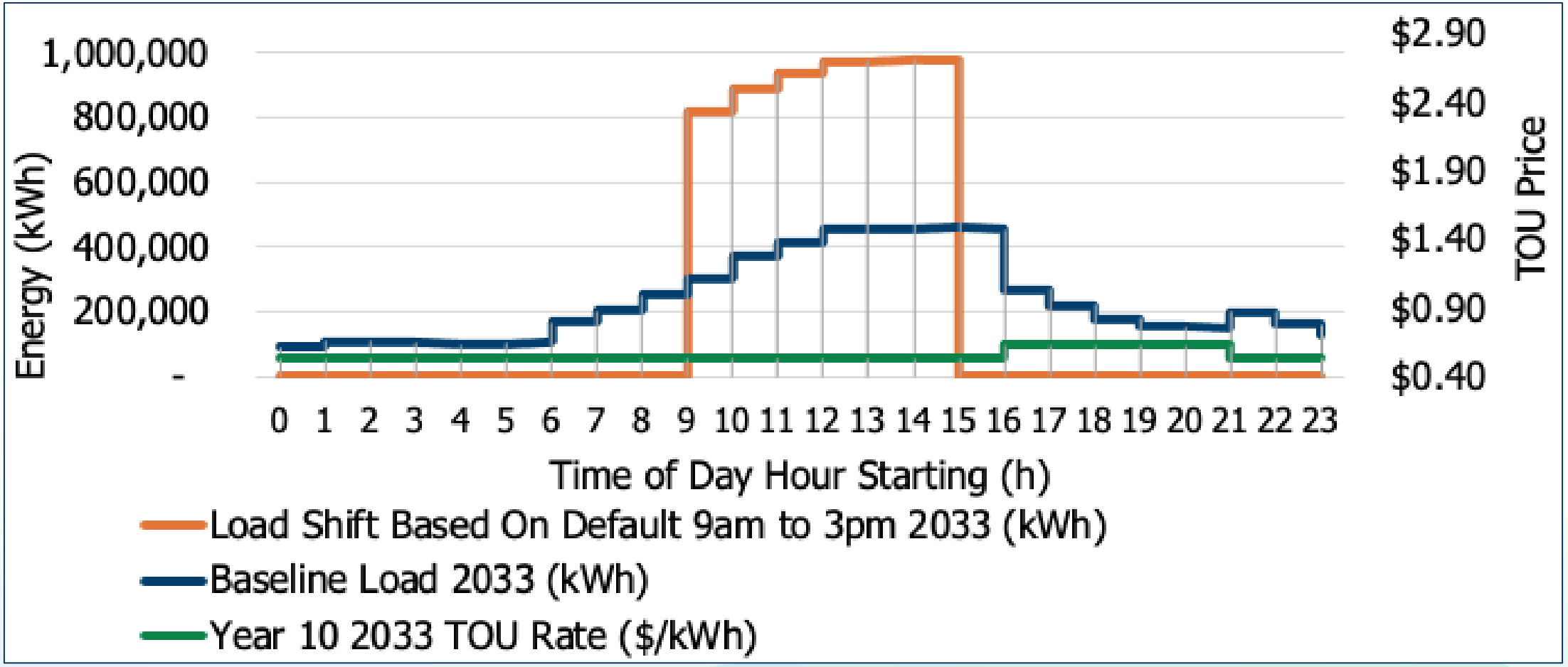
Flexible Demand Metrics

Pool Load Shapes and TOU Rates



Proposed Load Shift Strategy

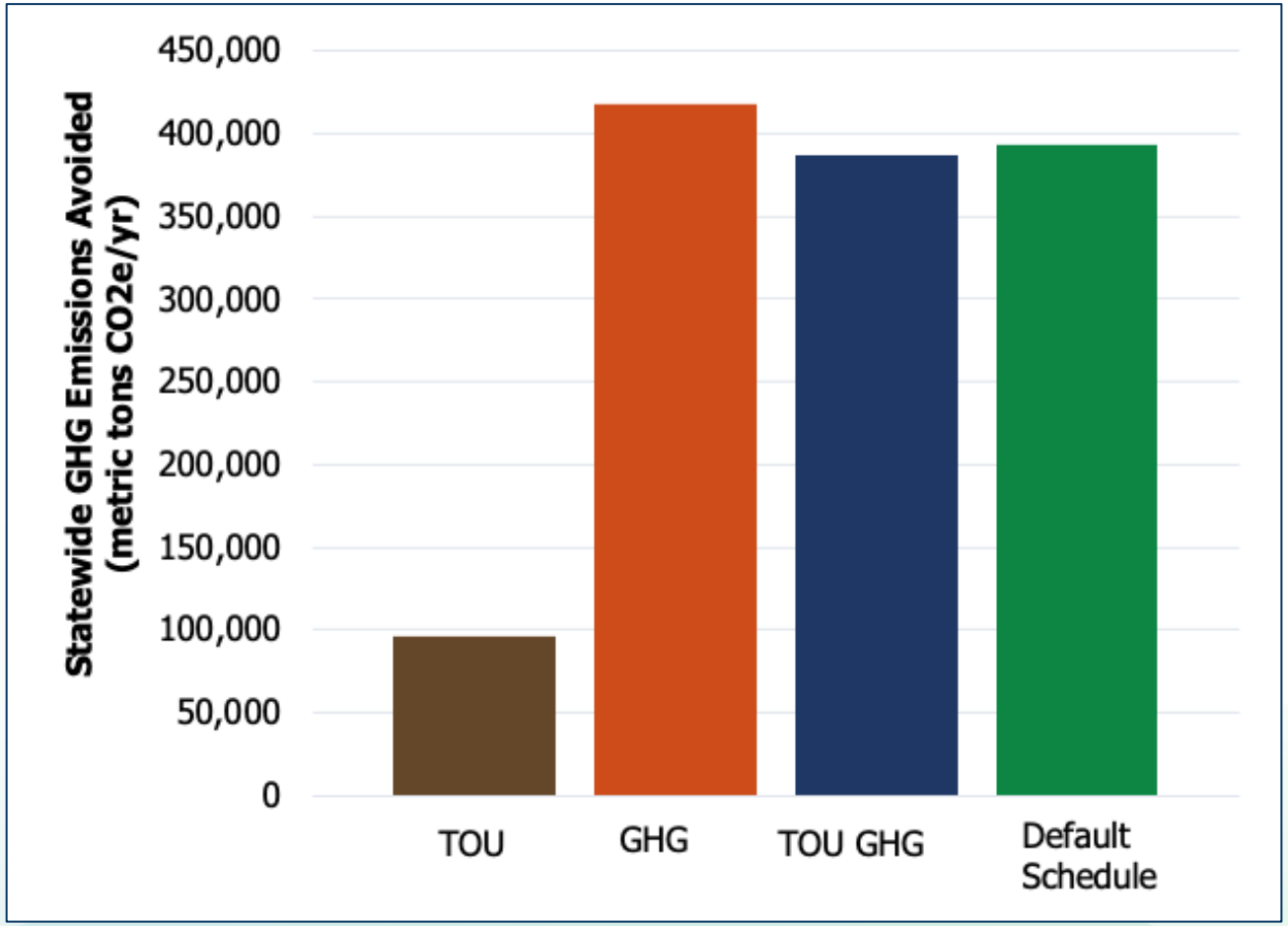
Load shift based on default schedule 9 a.m. to 3 p.m.



Proposal & Alternatives

Avoided GHG emissions from proposal and three alternatives:

- TOU-based Control
- GHG-based Control
- TOU+GHG-based Control
- Default Schedule



Time-of-Use electricity rate (TOU)
Greenhouse gas (GHG)

Annual Avoided GHG Emissions

Pool Controls	Potential GHGs Avoided During 2024, Year 1 (metric tons CO_2e)	Value of GHGs Avoided in Year 2024 (M $/yr) (In millions $2022)	Potential GHGs Avoided During 2033, Year 10 (metric tons CO_2e)	Value of GHGs Avoided in Year 2033 (M $/yr) (In millions $2022)
Staff Proposal: Default Schedule	33,000	2.0	394,000	27.0
Alternative 1: TOU Scheduling	7,000	0.4	96,000	6.6
Alternative 2: GHG Scheduling	40,000	2.4	418,000	28.0
Alternative 3: GHG & TOU Scheduling	35,000	2.2	387,000	26.0

Permanent Load Shift from Peak

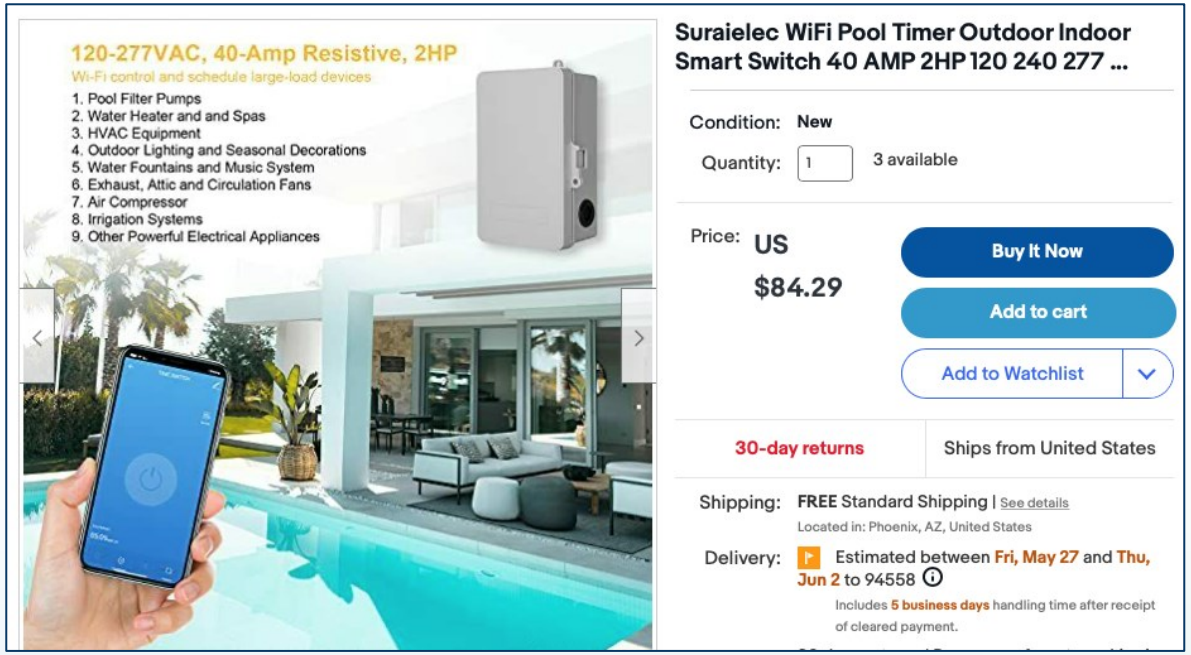
Proposal	Permanent Load Shift Single day at 6 p.m. to 10 p.m. Summer Weekday 8/18/2033 (GWh)	Permanent Load 6 p.m. to 10 p.m. Daily, August 2033 (GWh)	Permanent Load 6 p.m. to 10 p.m. Daily, 2033 (GWh)
Staff Proposal: Default Schedule	2	72	682
Alternative 1: TOU Scheduling	2	44	466
Alternative 2: GHG Scheduling	2	72	679
Alternative 3: GHG & TOU Scheduling	2	72	680

LSE Metrics with Default Schedule

Utility	Utility Bill Savings during year 2024 (2024 $)	GHG Emissions Avoided during 2024 (metric tons CO_2e)	Utility Bill Savings during year 2033 (2033 $)	GHG Emissions Avoided during 2033 (metric tons CO_2e)
SMUD	89,000	1,400	1,300,000	17,000
SCE	8,000,000	14,000	120,000,000	170,000
LADWP	0	4,100	0	49,000
PG&E	1,400,000	10,000	17,000,000	120,000
SDG&E	2,000,000	3,500	26,000,000	40,000
Total	11,000,000	33,000	165,000,000	394,000

Technical Feasibility

Standards can be met with existing models and technologies



Cost-Effectiveness

- Proposed standards are cost-effective
- Incremental cost of connectivity = $70
- Savings-to-Investment Ratio = $1,225 / $70 = 17.5
- Lifecycle Net Benefit = Total Benefit – Total Cost
- **Net Benefit** to consumers: $1,225 - $70 = **$1,155**

Year	1	2	3	4	5	6	7	8	9	10	Total
Savings	$103	$107	$111	$116	$120	$125	$129	$134	$138	$142	**$1,225**

Statewide Costs and Benefits

Value of GHGs Avoided in First Year 2024 (M$/yr)	Value of GHGs Avoided at Stock Turnover in Year 2033 (M$/yr)	Annual Consumer Savings First Year 2024(M$/yr)	Annual Consumer Savings at Stock Turnover in 2033 (M$)
2	27	11	170

$70 Upfront incremental cost for a compliant pool control
(In $2022)

CPUC Comments on Flexible Appliances

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CPUC on Appliances and Flexible Demand

Daniel Buch
Program Manager, Energy Division
California Public Utilities Commission

Respondents' Panel Introduction

Time	Topic	Presenter
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Respondents' Panel Introductions

- **Natural Resources Defense Council, Inc. / NRDC**

  Pierre Delforge, Director – Clean Buildings

- **Pool and Hot Tub Alliance / PHTA**

  Jennifer Hatfield, Regulatory Affairs Consultant

- **Pacific Gas and Electric Company / PG&E**

  Mary Anderson, Statewide Appliance Standards Lead

- **WattTime**

  Henry Richardson, Analyst

Discussion Topic One

How does a statewide standard for pool controls that prescribes periods of operation to be during times of low GHG emission intensities and cheaper electricity rates bring benefits to:

- Pool owners?
- Residents in low income and/or disadvantaged communities?
- Consumers?
- Others?

Discussion Topic Two

How can the proposed standards for pool controls be improved to better address the **reliability** of the electricity grid in California?

Discussion Topic Three

Under this proposed regulation, the devices must be capable of receiving data from the internet and perform clock synchronization.

Are you aware of any concerns about such a connectivity requirement, e.g., access for low-income households, cybersecurity, exposure of personal information, etc.?

Finally, what are your thoughts on some of the next steps to be addressed?

Public Comments

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Concluding Remarks

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Concluding Remarks

- Flexible demand appliances are an opportunity to reduce GHG emissions and decarbonize California's economy
- Thank you for your participation and comments today!
- The CEC values your active participation!
  Please provide written comments to **Docket #20-FDAS-01**

Next Steps

- Evaluate all comments received by August 31st
- Stakeholders are encouraged to join "Flexible Demand Appliances and Load Management and Demand Response" list server

Activity	Date
Draft Staff Report Workshop	July 19, 2022
Public Comment Period for Workshop Closes	August 31, 2022
Final Staff Report and Start Formal Rulemaking	4th Quarter 2022
Public Comment Period and Public Hearing	4th Quarter 2022
Adoption Hearing at CEC Business Meeting	1st Quarter 2023
Effective Date of Pool Control Standards	1st Quarter 2024

Written Comments

- Comments due **by 5:00 p.m. on August 31, 2022**
- To **submit electronically**:
  - https://www.energy.ca.gov/proceedings/energy-commission-proceedings/flexible-demand-appliances
  - Click on “Submit Comment”
- To **send a hard copy**:

  California Energy Commission
  Docket Unit
  Re: Docket No. 20-FDAS-01
  715 P Street
  Sacramento, CA 95814

- Send **digital copy** to: **docket@energy.ca.gov**, include **#20-FDAS-01**

Thank You!