DOCKETED

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CA IOUs_Title 20 Computers_Workshop_2016-04-26

Additional submitted attachment is included below.

Computers

Response to Standards Proposal

Presented to the California Energy Commission

April 26, 2016

PG&E

SOUTHERN CALIFORNIA EDISON
An EDISON INTERNATIONAL Company

SDGE
A Sempra Energy utility

The Gas Company
Sempra Energy utility

Why Standards?

Desktop

All-in-One

Notebook

Thin-client

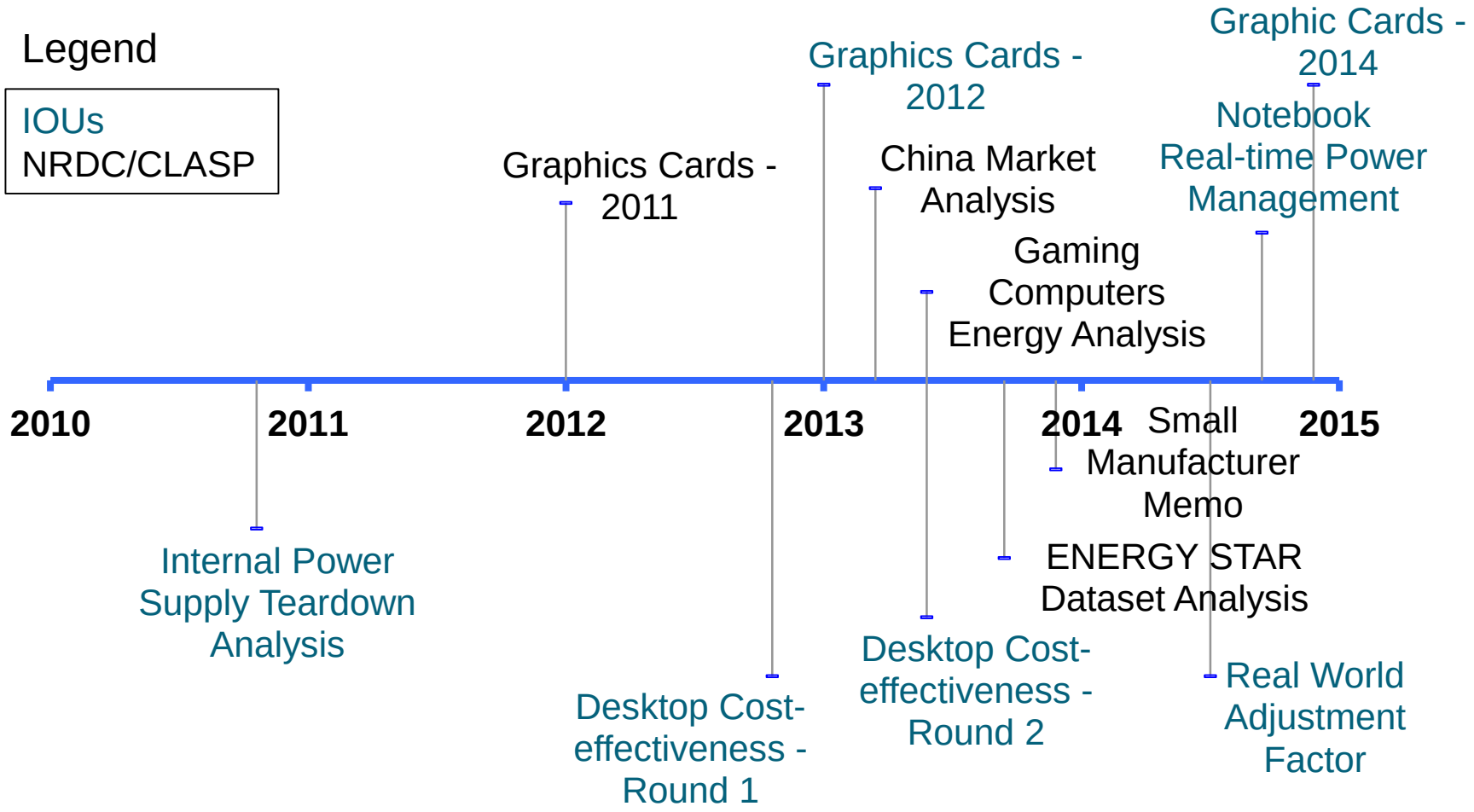
Workstation

Small-scale server

- Despite progress, still significant energy savings opportunities.
- Cost-effective and feasible solutions.
- State policy goals.

- **IOUs generally support the CEC's proposal.**
- **Several areas for improvement.**

Supporting Data Before 2015
12+ testing & research projects

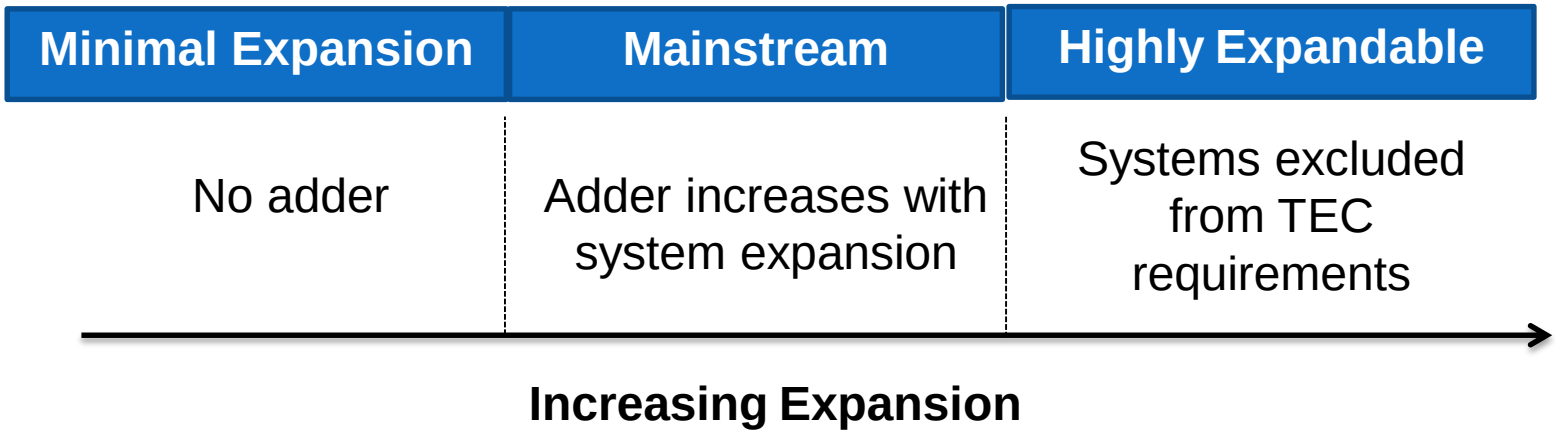


Activities Since Jan 2015

- **Desktop demonstration**
- **Ongoing engagement with ITI, including:**
  - 2 deep dives (Folsom July 2015 and hosted October 2015)
  - Joint submittal re: definitions
  - Shared proposals on framework
- **Additional analysis and submissions / addendums to Standards Proposal, including:**
  - Discrete graphics cards
  - Security Features
- **Review & modification to certification requirements**
- **2nd round of compliant desktop demonstration**
- **AIO comparison and tear-down project (NRDC)**

Expandability Adder

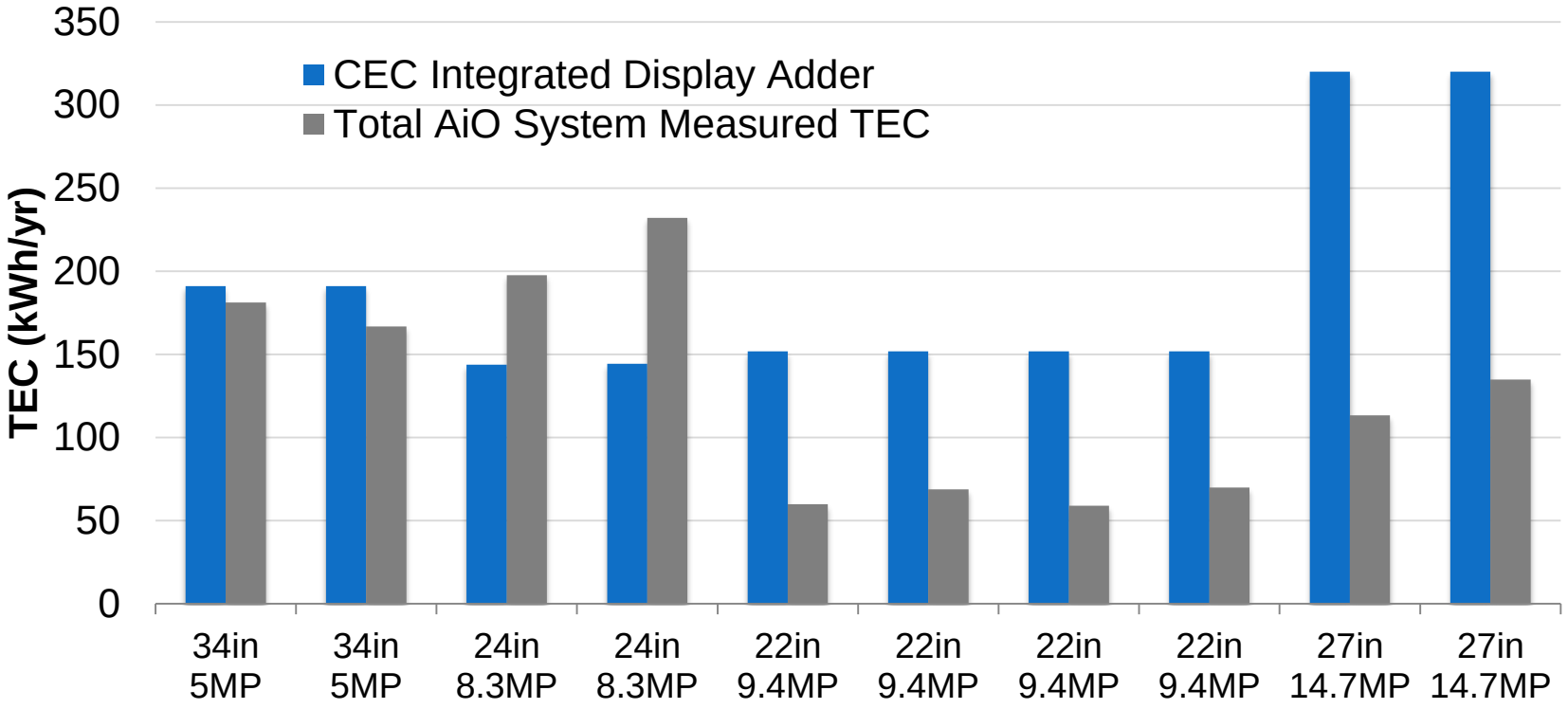
IOUs support CEC's expandability framework to address needs of highly expandable desktop systems



Two key areas for refinement and clarification:

- Expandability score calculations
- Criteria for exemption from TEC requirements

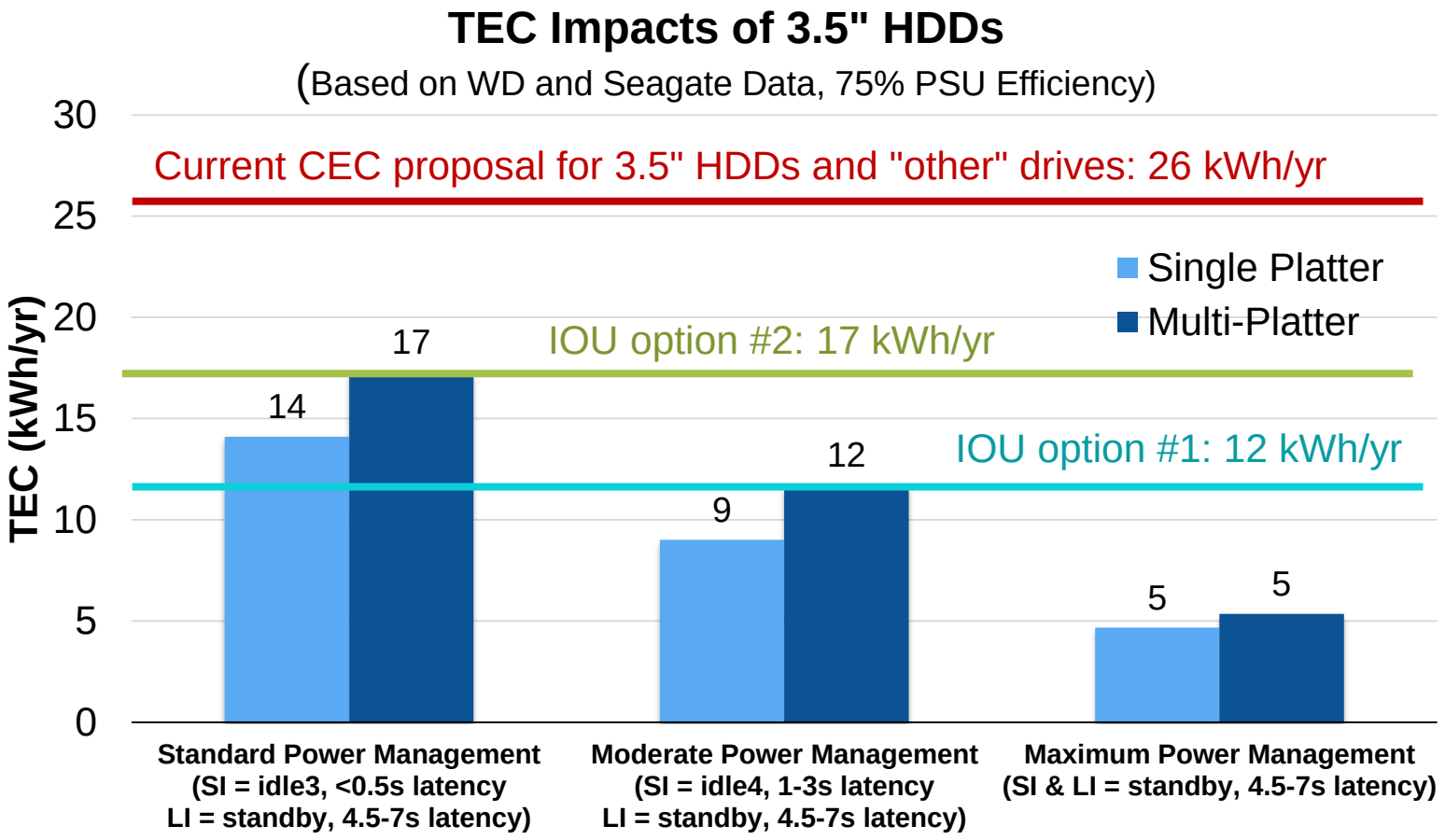
Integrated Display Adder



- CEC proposed adder is too lenient for resolutions > 2 MP and large sizes. Adder often exceeds TEC of entire system.
- Proposed EPD factors amplify problem
- The IOUs recommend:
  - a hyperbolic adder equation
  - lower allowances for EPDs

Secondary Storage Adder

CEC should tighten secondary storage adders for 3.5” HDDs (12-17 kWh/yr possible with modest PM)



Lacking data, adder for “other” drives should match solid-state memory (0.5 kWh/yr)

Power Supply Efficiency Requirements Should Extend to All Desktops

	CEC Staff Proposal	IOU/NRDC Proposal
Workstations	80 PLUS Gold	**80 PLUS Gold and power factor levels**
High-Performance/Expandability DTs*		
Mainstream DTs	No PSU requirements	**80 PLUS Bronze and power factor levels**

* Definition/scope to be defined

- Guarantees energy savings in active modes
- Similar stringency to EU ErP power supply requirements
- Prevents backsliding on over a decade of power supply efficiency market transformation efforts internationally

Duty Cycle: Need to Close Loophole

ENERGY STAR 6.1 Specification

Table 3: Mode Weightings for Desktop, Thin Clients, and Integrated Desktop Computers

Mode Weighting	Conventional	Full Network Connectivity			
		Base Capability	Remote Wake	Service Discovery / Name Services	Full Capability
T_{OFF}	45%	40%	30%	25%	20%
T_{SLEEP}	5%	15%	28%	36%	45%
T_{LONG_IDLE}	15%	12%	10%	8%	5%
$T_{SHORT\ IDLE}$	35%	33%	32%	31%	30%

Table 4: Mode Weightings for Notebook Computers

Mode Weighting	Conventional	Full Network Connectivity			
		Base Capability	Remote Wake	Service Discovery / Name Services	Full Capability
T_{OFF}	25%	25%	25%	25%	25%
T_{SLEEP}	35%	39%	41%	43%	45%
$T_{LONG\ IDLE}$	10%	8%	7%	6%	5%
$T_{SHORT\ IDLE}$	30%	28%	27%	26%	25%

- Data informed, although should be updated

- No known data
- No existing test method to determine type of connectivity
- Could result in understated TEC by up to ~10%.

Notebook Levels Far Too Lenient; Missed Savings Opportunity

- 90% of ENERGY STAR v6.1 models meet Staff Report #1 standard levels (ITI 2015, April Workshop)
- 97% of '15-'16 ENERGY STAR v6.1 models meet Staff Report #2 standard levels

Recommendation:

- **Reduce** base allowance:
  - **11 kWh** (~50% QPL pass rate)
  - **16 kWh** (~75% QPL pass rate)
- **Reduce** displays adder **by at least 35%** (~50% QPL pass rate)
- **Categorization** for high-specification notebooks

Cost-effective savings: up to ~290 GWh/yr, ~$47 M/yr

Source: ENERGY STAR 6.1 QPL 2015 & 2016. Estimates display at 9 kWh/yr and memory at 5 kWh/yr (2 modules)

Cost-effective & Feasible Standards

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Generally Support, Suggested Modifications:

- Expandability adder
- Secondary storage adder
- Integrated display adder
- Power supply requirement
- Duty cycle
- Notebook base allowance and adders