

OG&E's Smart Study TOGETHER: Impact Assessment of Enabling Technologies and Dynamic Pricing Rates

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Agenda

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Program Background

- Program Design (Rate/Technology)

2010 DR Study

- Hypothesis, results

2011 DR Study

- Results
- Phase I vs. Phase II participants

What do there results mean?

- What rate/technology = load savings
- Can we defer generation?



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Smart Grid Program

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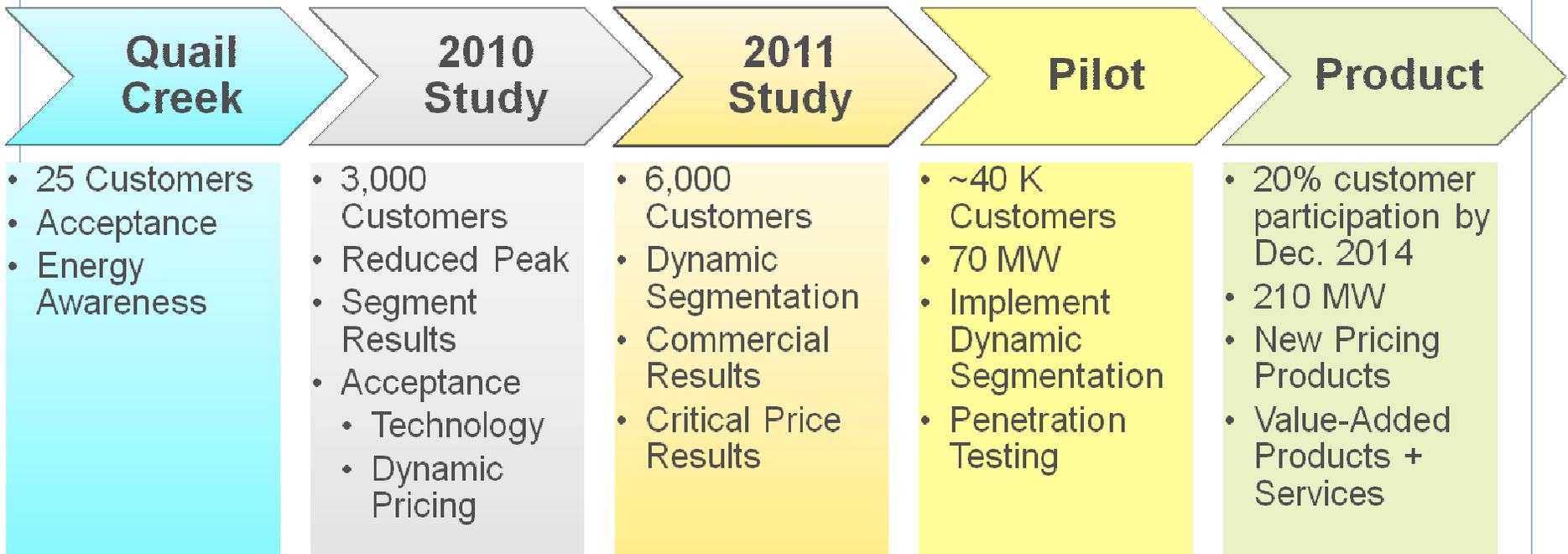
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Smart Grid Demand Response Background

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Study Design—Price Plans

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VPP

TOU

4.5¢/kWh

Off-Peak/Low

4.2¢/kWh

11.3¢/kWh

Standard

23¢/kWh

High

23¢/kWh

46¢/kWh

Critical

46¢/kWh

Critical Price
Event

46¢/kWh



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Study Design—Price Plans

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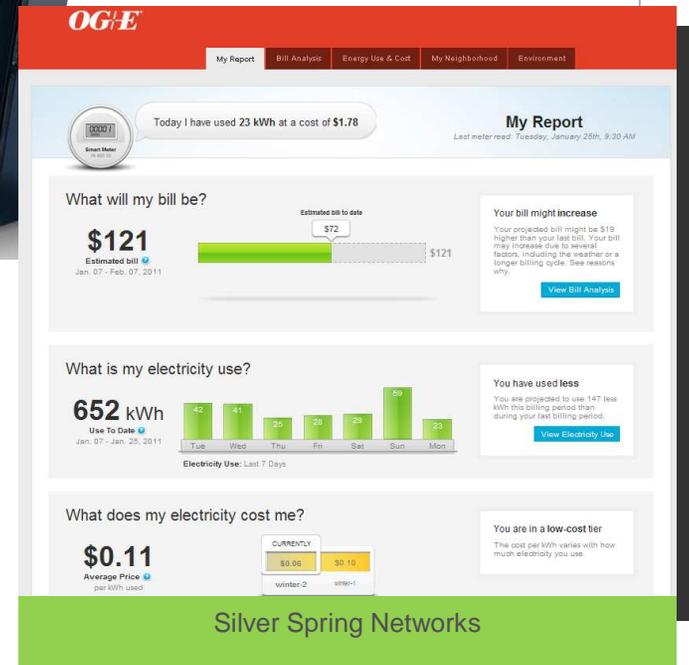
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Study Design—Technology

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Energate Pioneer



Study Design—Randomization

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Goal of study design

- Provide statistically valid estimates of savings from current participants and from participants responding to a future rollout

Voluntary

- The future program rollout will be voluntary, so the pilot is as well

Only one rate/technology combination will be offered

- Compare each rate/technology combination to the control group
- Do not give customers a choice of rate or technology

Randomized design

- Randomize assignment to rate/technology groups and control group
- Reduce/eliminate self-selection bias to the extent possible

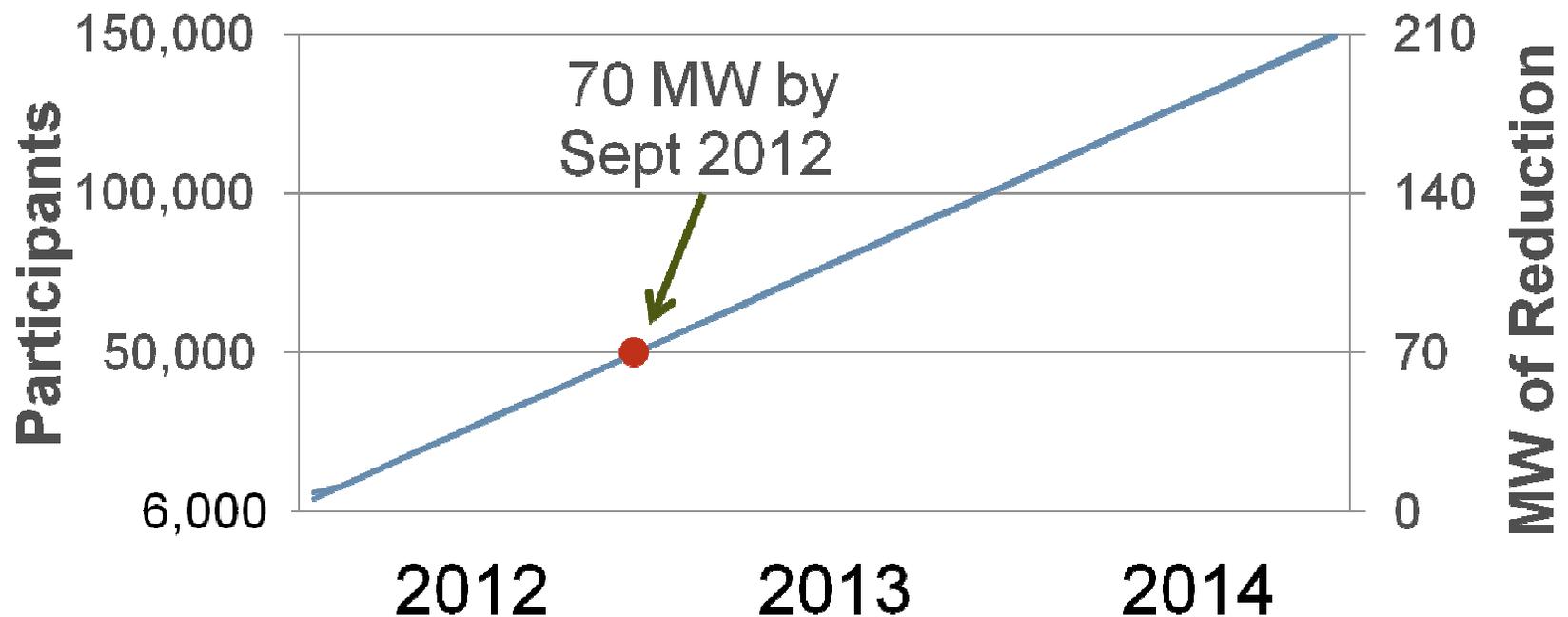


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DR Study Hypothesis

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- 20% Participation by December 2014
 - 150K customers (50k per year)
- 1.33 kW per customer (~70 mW per year)



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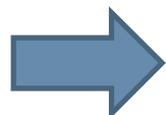
2010 Study Results



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2010 Study Results Validate Hypothesis

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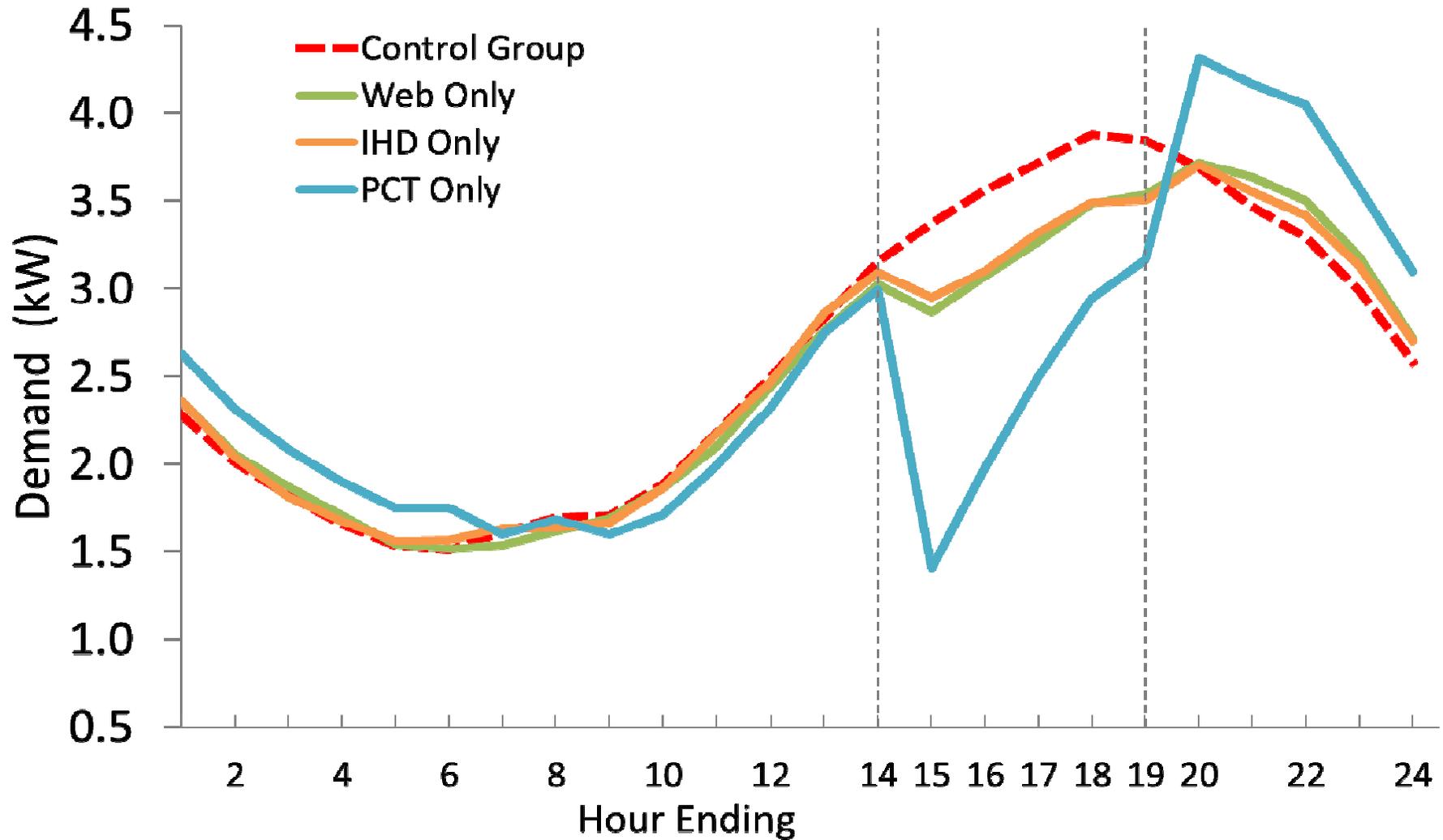
VPP rate combined with PCT enabling technology *maximizes* load reduction

	VPP-CP Critical Weekday Max DR	TOU-CP Average Weekday Max DR
Web	0.51 kW	0.33 kW
IHD	0.47 kW	0.54 kW
PCT	1.96 kW	1.25 kW

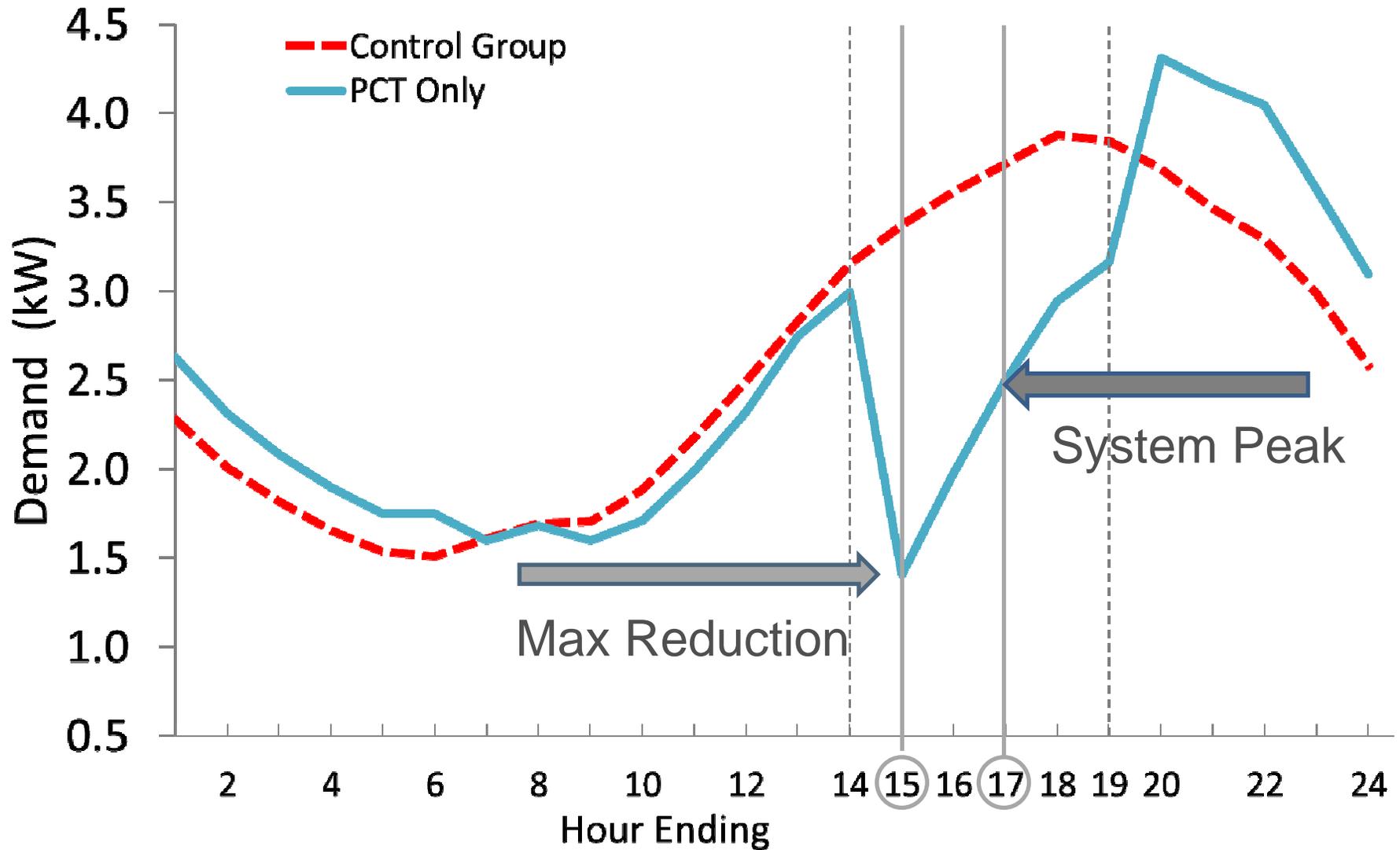


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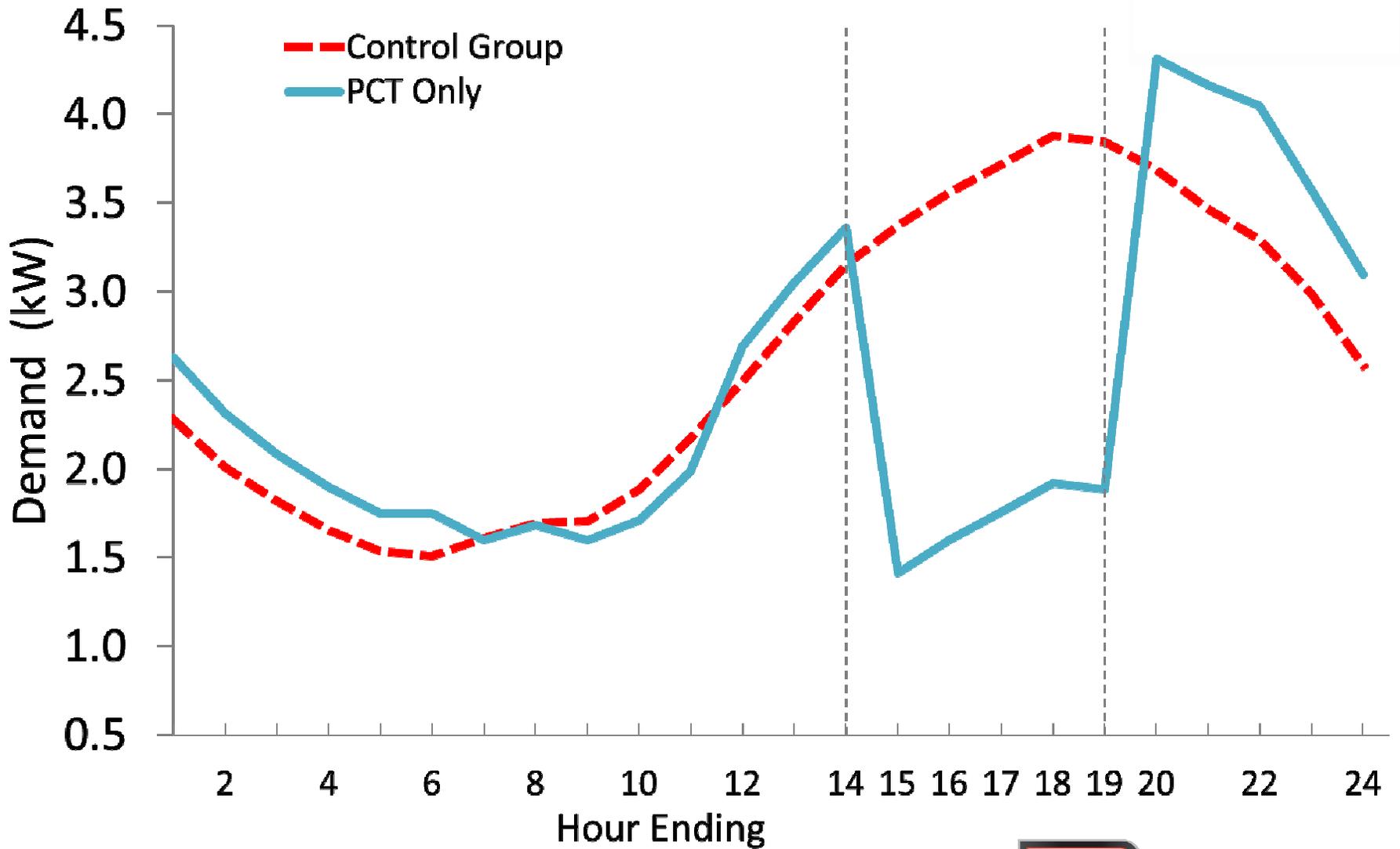
2010 Results - VPP Critical Price Weekday



2010 Results



Desired Results



Shifting and Conservation

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kWh Savings, VPP-CP Critical Weekday			kWh Savings, TOU-CP Average Weekday	
	On Peak kWh	Off Peak kWh	On Peak kWh	Off Peak kWh
Web	-2.15	0.43	-1.49	0.41
IHD	-2.02	0.50	-2.51	-1.81
PCT	-6.43	3.74	-4.41	1.25



VPP Demonstrates Price Elasticity

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	On Peak Price ¢	Maximum Demand Reduction		
		Baseline	Reduction	Percent
VPP Low	4.5	2.35	0.41	18%
VPP Standard	11.3	2.45	1.11	45%
VPP High	23	3.08	1.68	55%
VPP Critical	46	3.37	1.96	58%



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2011 Study Results



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2011 study results

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Results from 2011 confirm 2010

Load shapes changed, Demand Reduction approx. the same (2010 v. 2011)

Strategically called events can

- Stretch out savings
- Add secondary bump to savings closer to the system peak

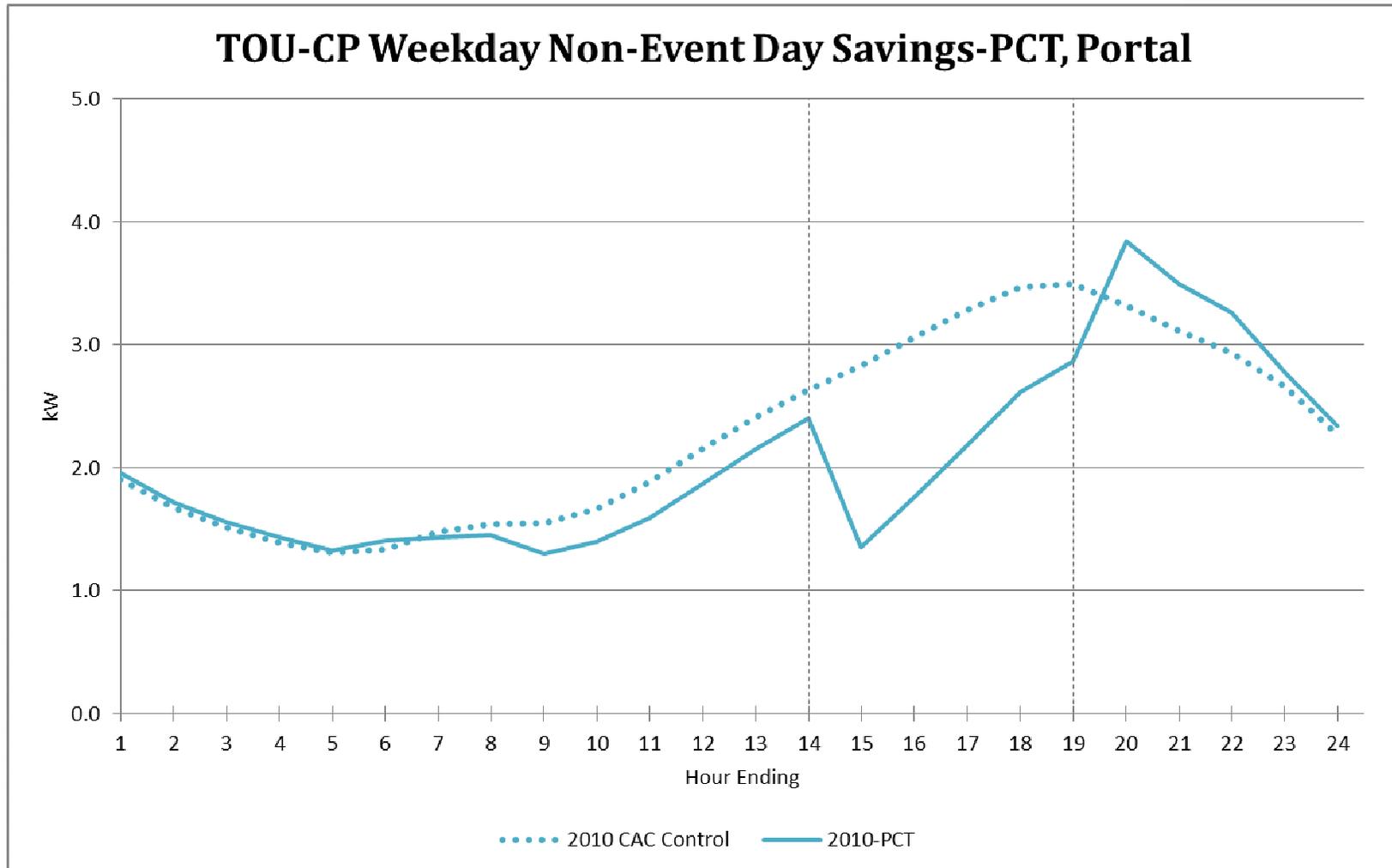
2011 Summer was HOT!



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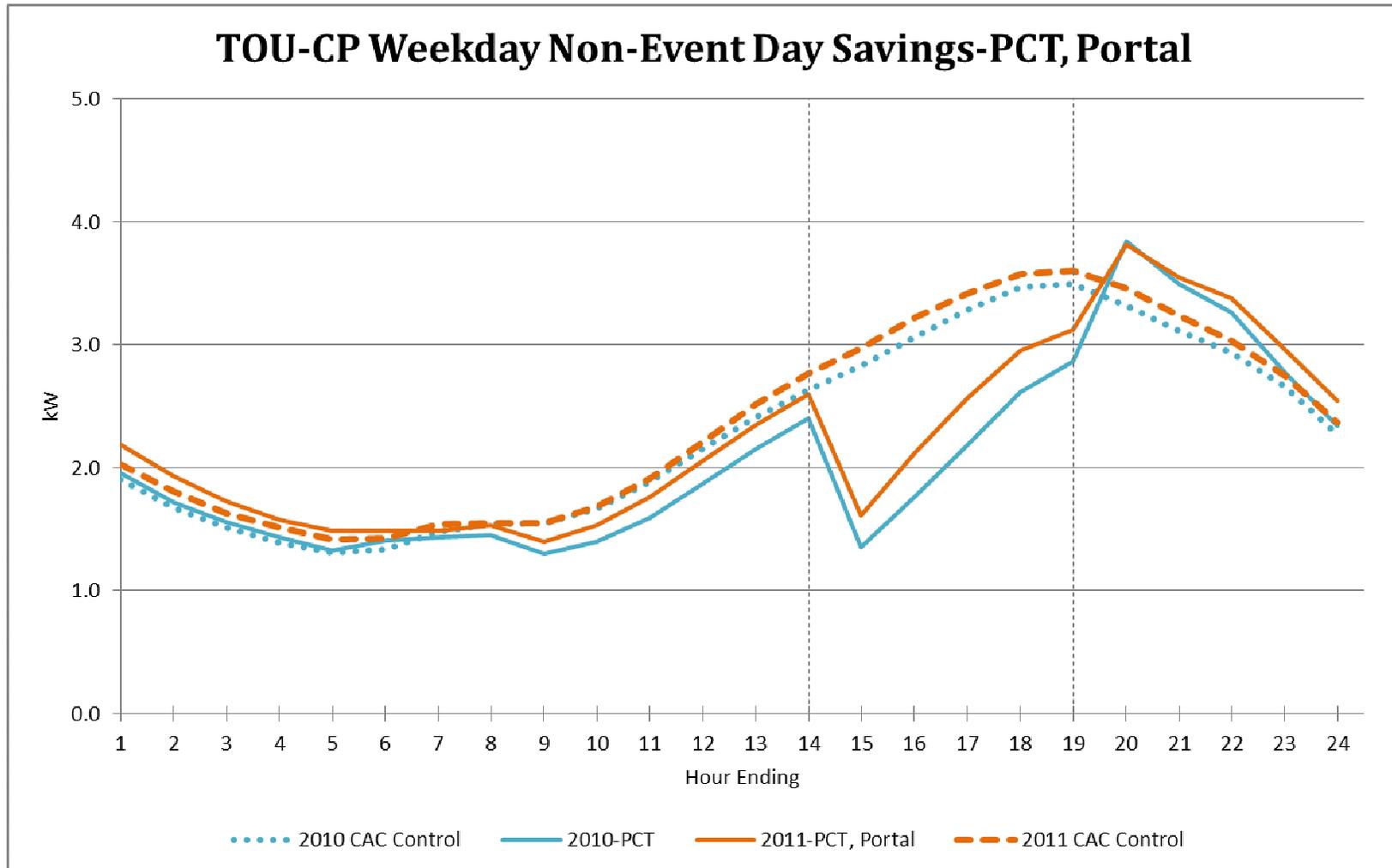
2010 versus 2011 Impacts-TOU-CP

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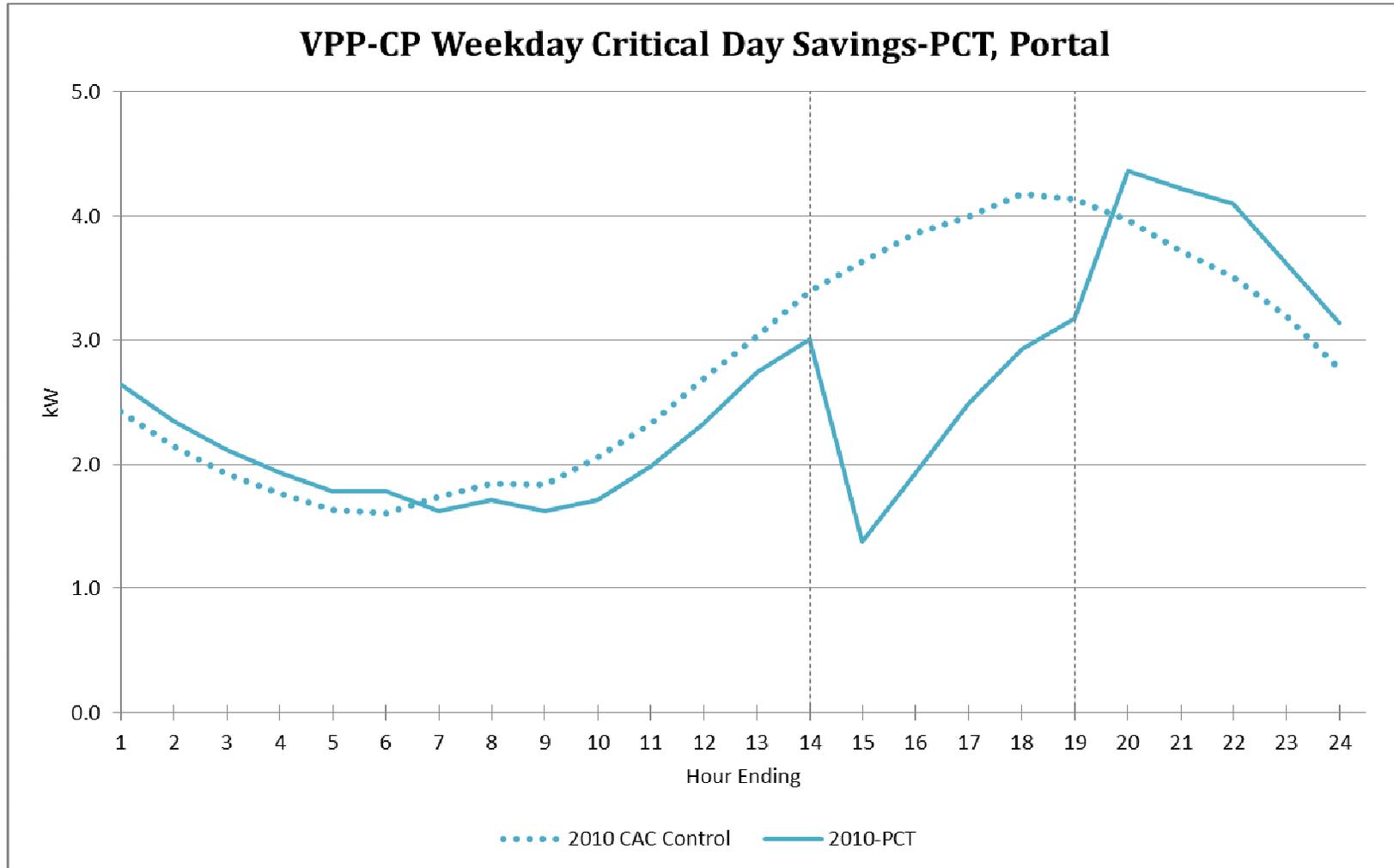
2010 versus 2011 Impacts-TOU-CP

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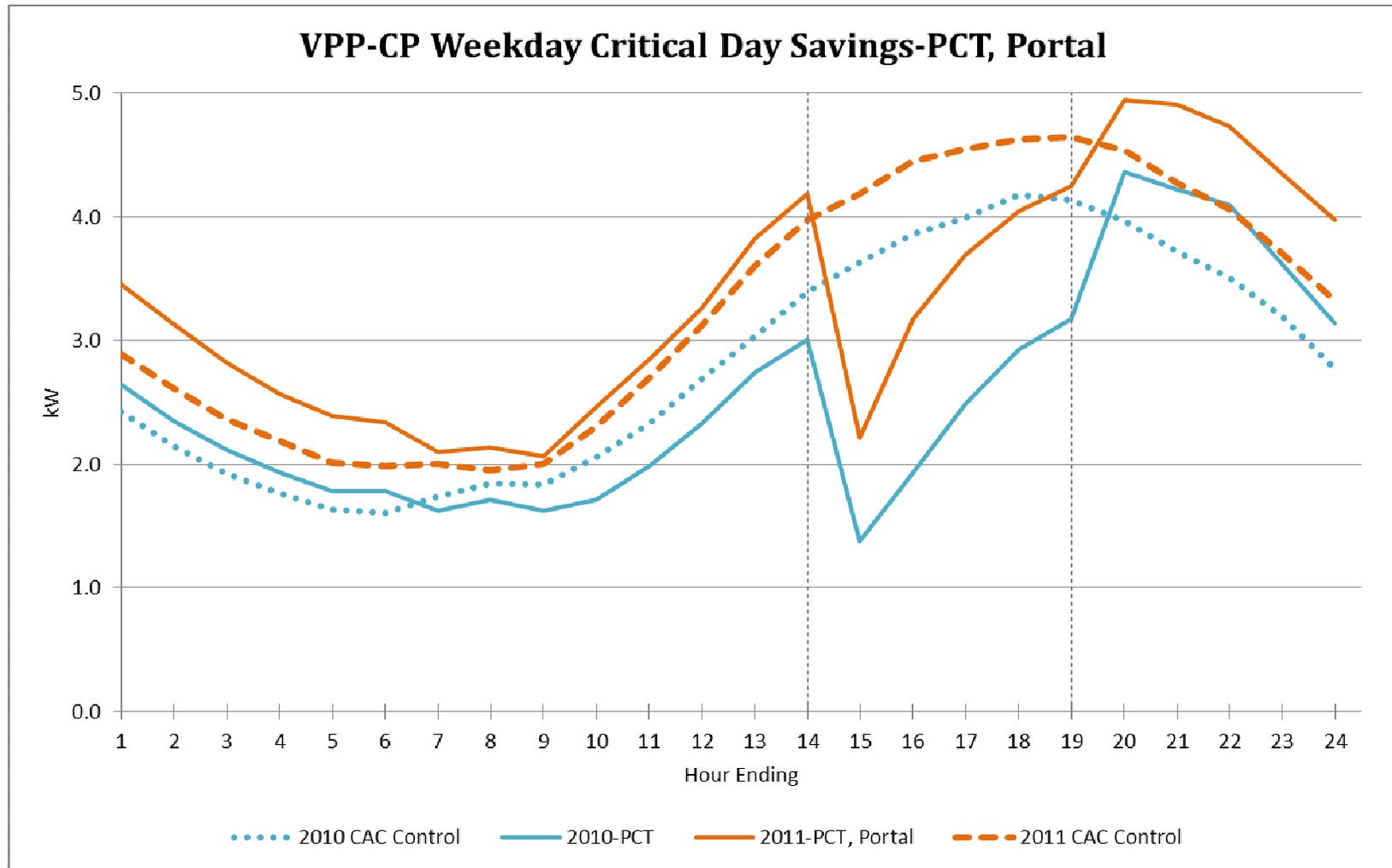
2010 versus 2011 Impacts-VPP-CP

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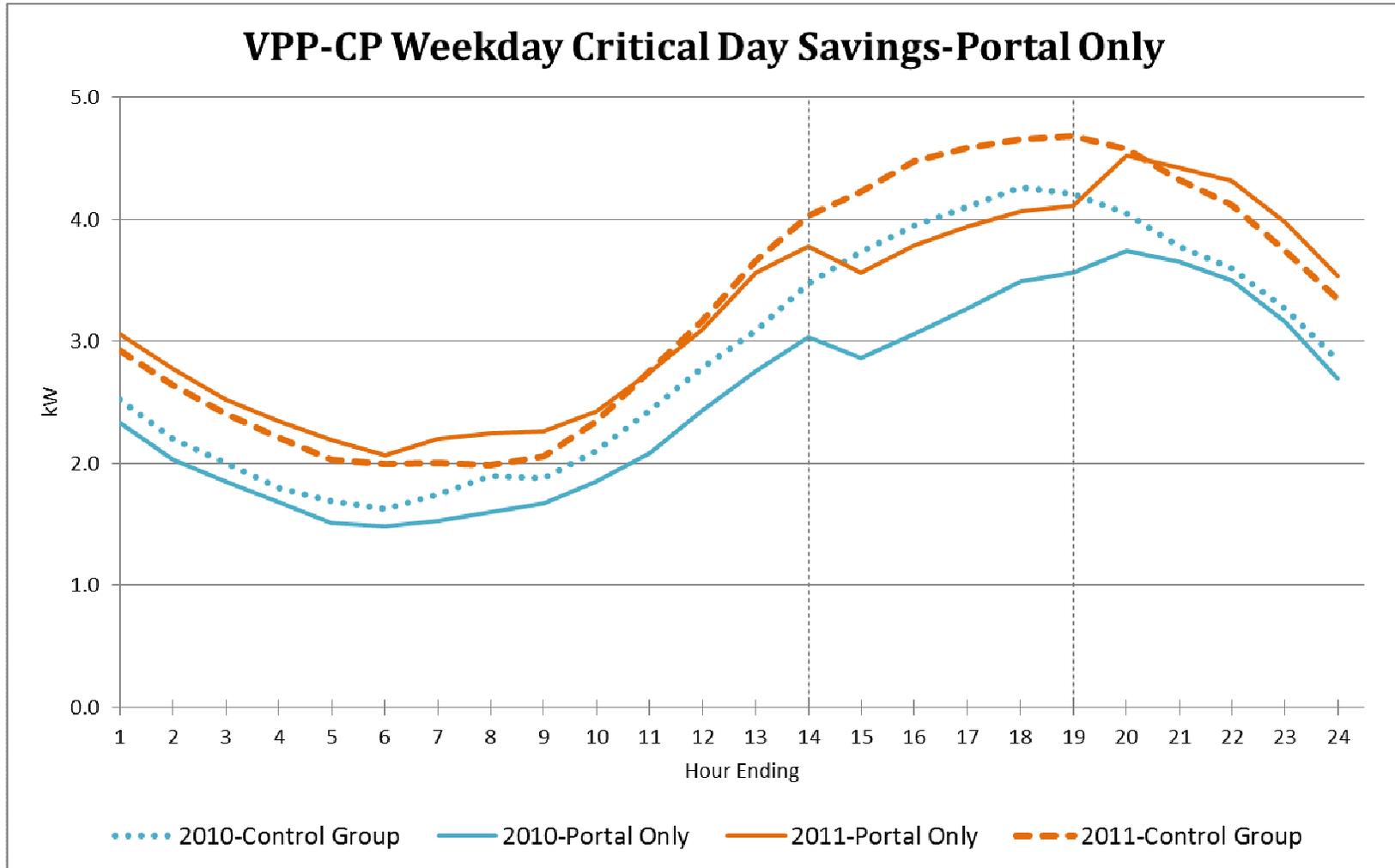
2010 versus 2011 Impacts-VPP-CP

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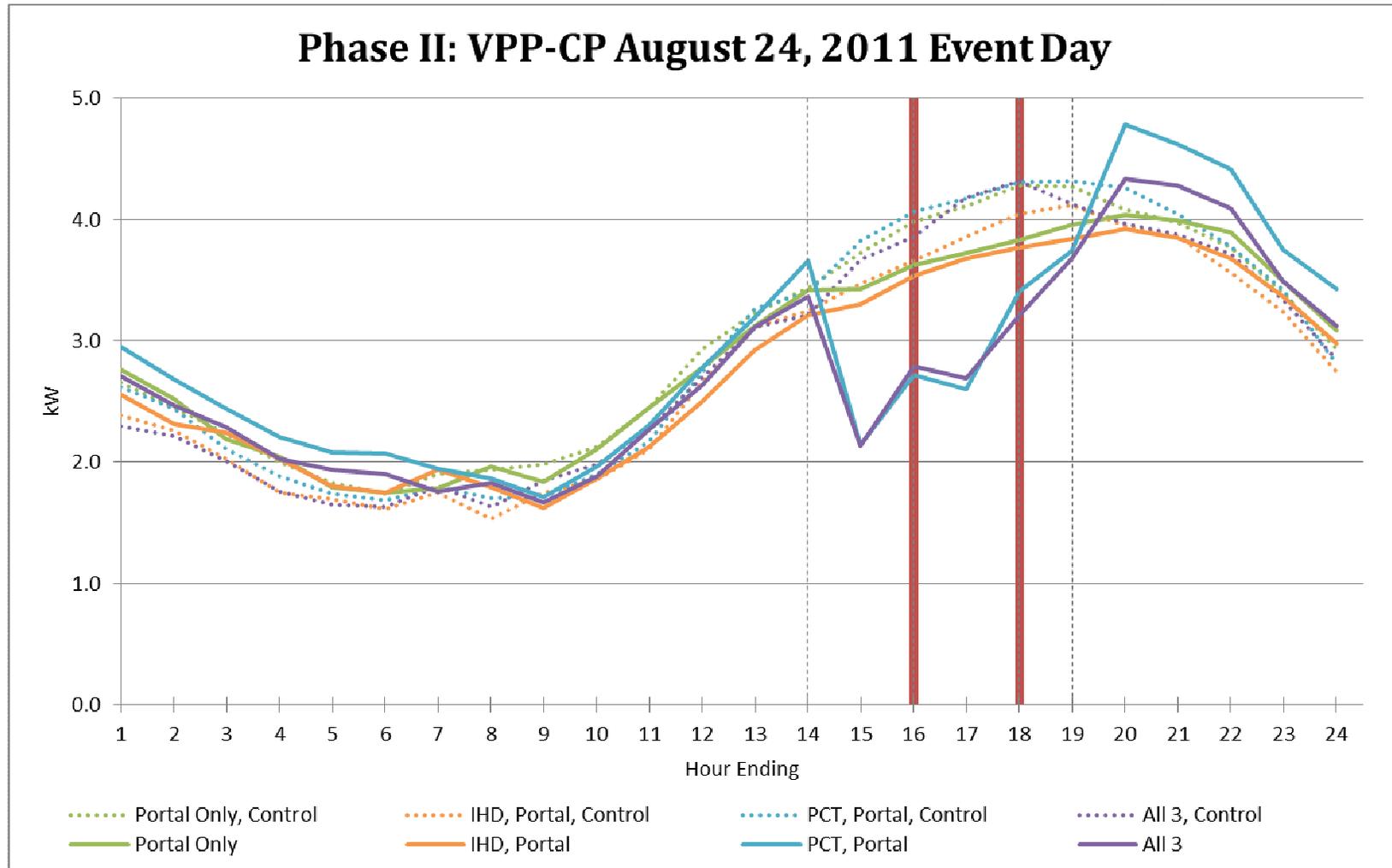
2010 versus 2011 Impacts-VPP-CP

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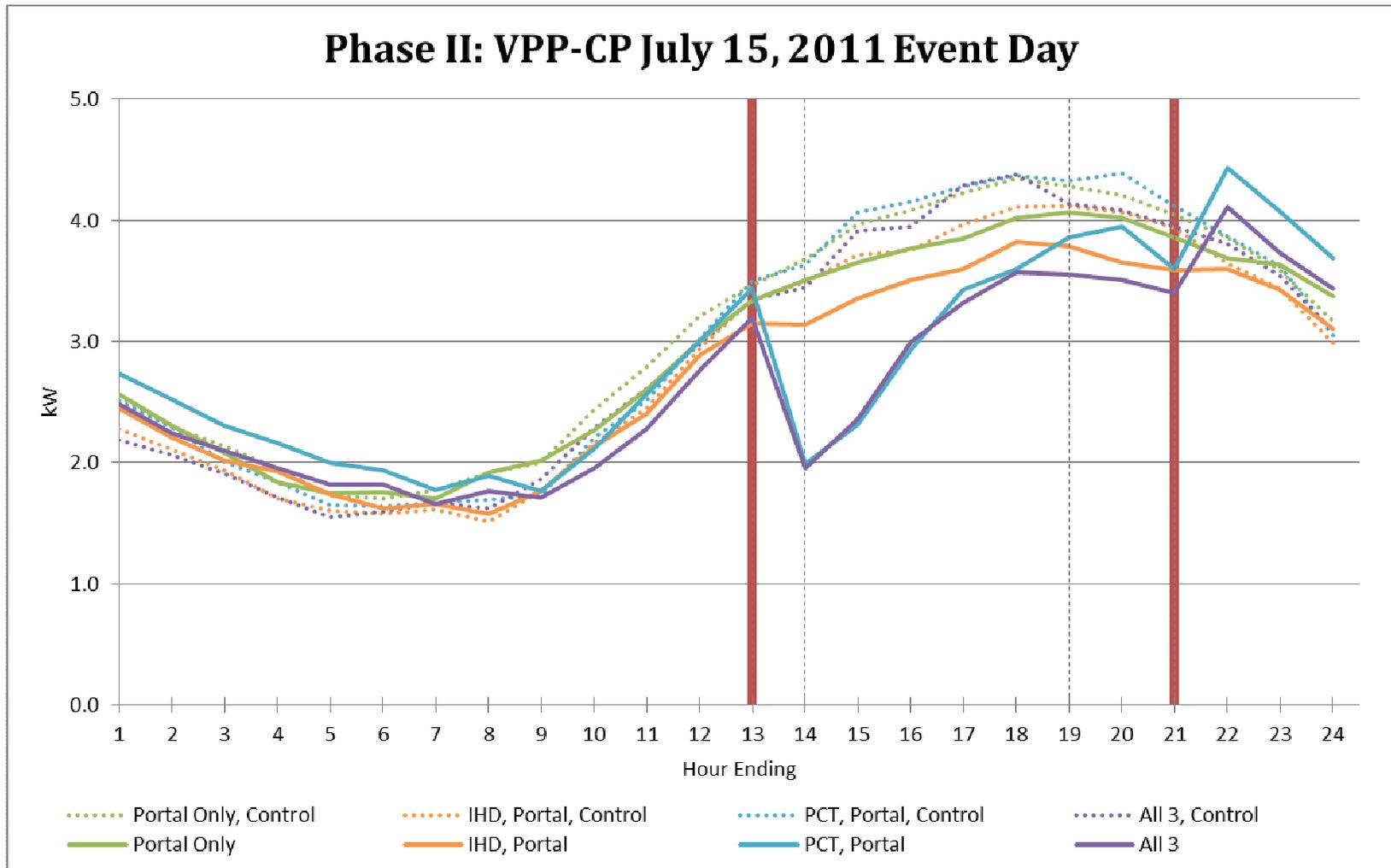
Event Day Savings—Short Event

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Event Day Savings—Longer Event

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Conclusion

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Potentially Avoid Future Generation

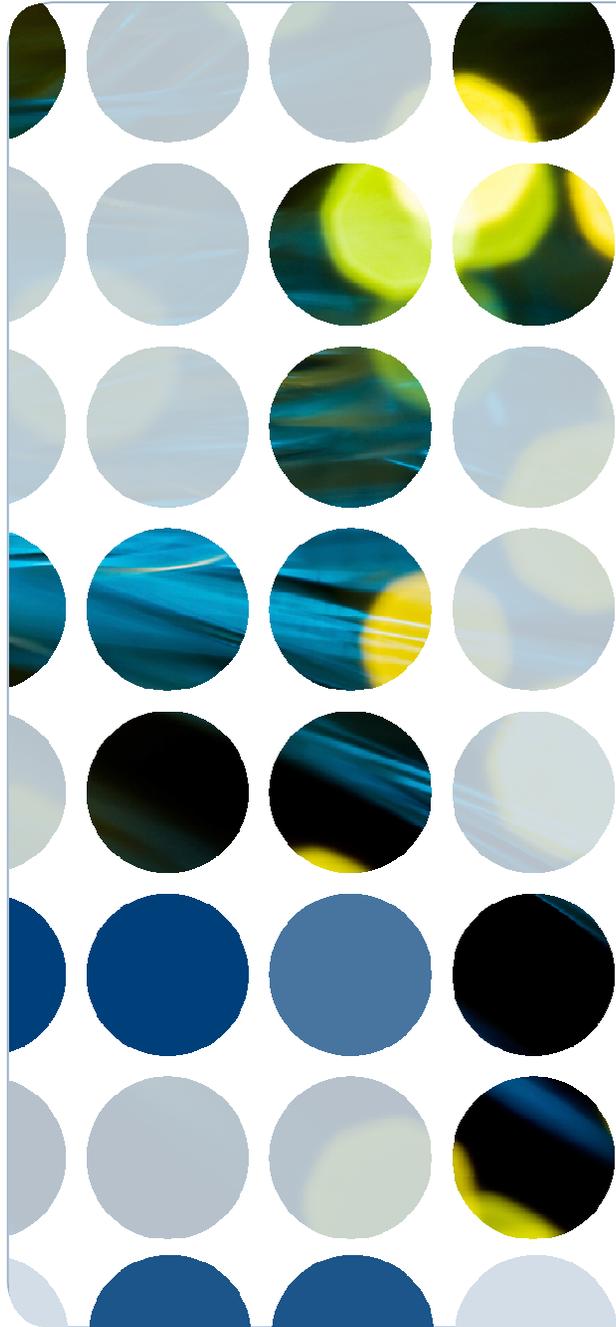
- Study results show a 1.3 kW reduction per customer is possible. Participation targets will achieve goal
- Event calling enables reduction at time of peak

Plans for 2012

- 37,500 customers enrolled in SmartHours
- 72 mW reduction
- Discontinue roll out of IHD



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