



BUILDING BLOCKS OF DEMAND RESPONSE PROGRAMS: Implications for a Successful Smart Thermostat Offering

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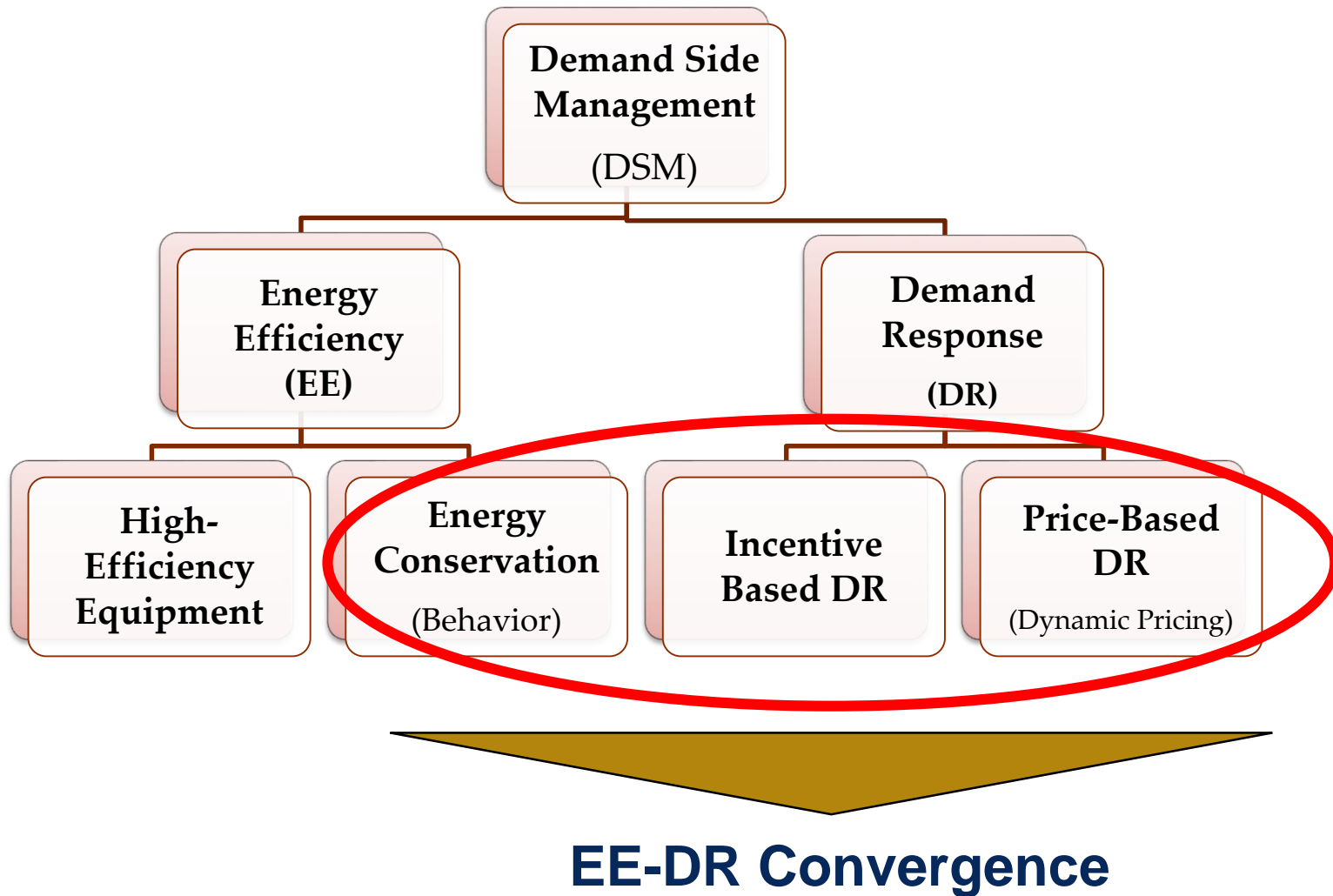
STRATEGIC THINKING AND DELIVERY

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If only it were this simple...

**“Let’s offer a thermostat program.
Should it be BYOT or not?”**

Thermostats Can Touch Most Parts of Your DSM Portfolio



Making Smart Thermostats a Reality

Portfolio Design

- Objectives of the DR resources for the utility
- T-stats role within the portfolio
- Cannibalization of existing programs

Program Design

Program Implementation

Current DR Portfolio and Drivers Influence Thermostat Program Design

About your portfolio...

- Do you already have an A/C DLC program?
- Is it one-way communication? Do you get AMI data for most/all participants?
- Do you offer CPP rates or Peak-Time Rebate?
- How do you maintain/phase out existing switch program?

Grid Services Objectives

- Defer investment in generation/ capacity
- Defer T&D investments/
Address local network constraints
- Reduce energy supply costs
(via economic dispatch)
- Provision of ancillary services
(e.g. spinning reserves)
- Support expansion of intermittent
renewables

Non-Operational Drivers

- Regulatory requirement
- Support corporate strategy
- Provide a unique customer value
- Customer control over bills
- Test ability to do DR for future application
- Other

Making Smart Thermostats a Reality

Portfolio Design

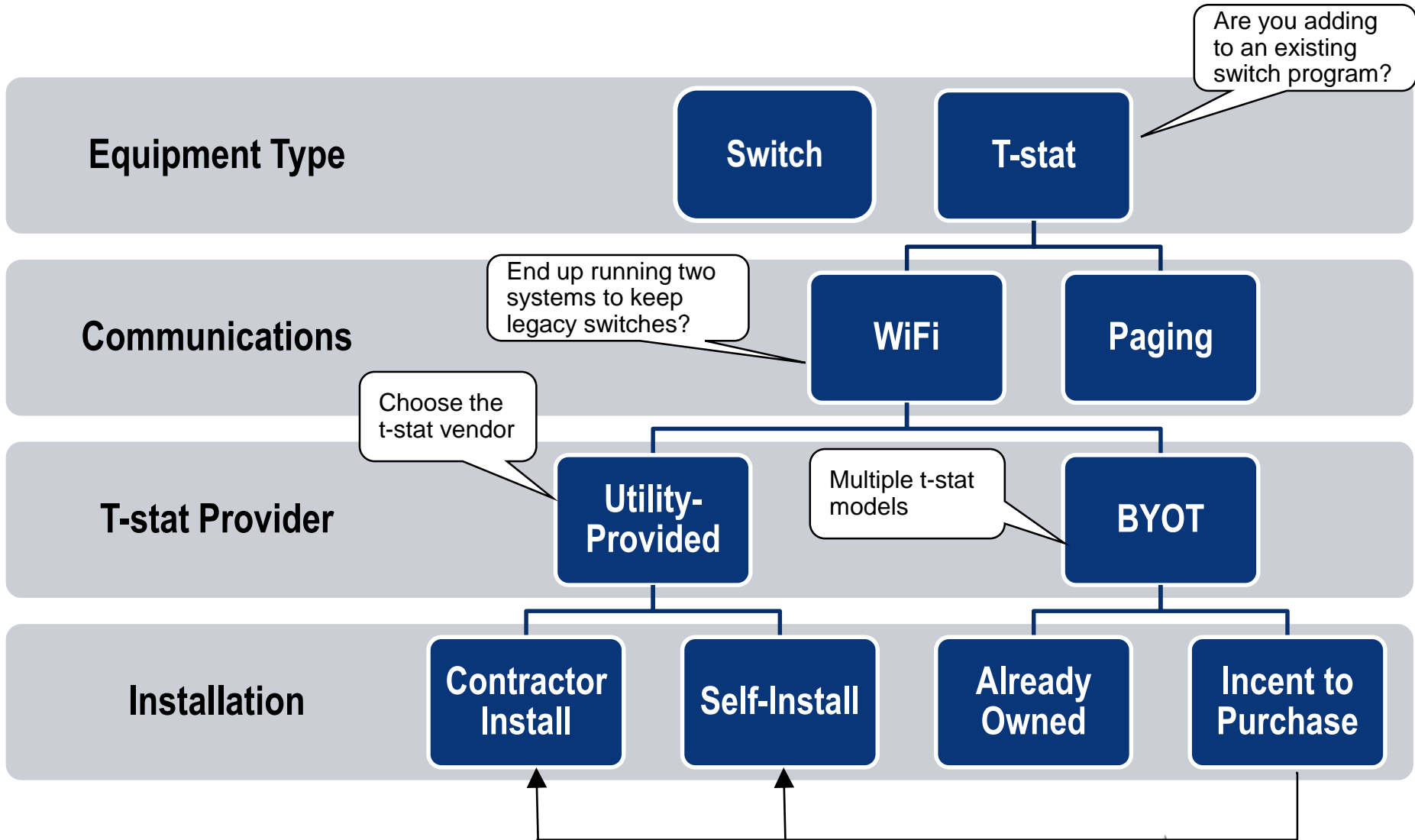
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Program Design

- Technology/equipment choices
- Technology services
- Eligibility
- Incentives
- Dynamic rates
- Load control/temp offset strategies

Program Implementation

Thermostat Program Design – The Big Choices

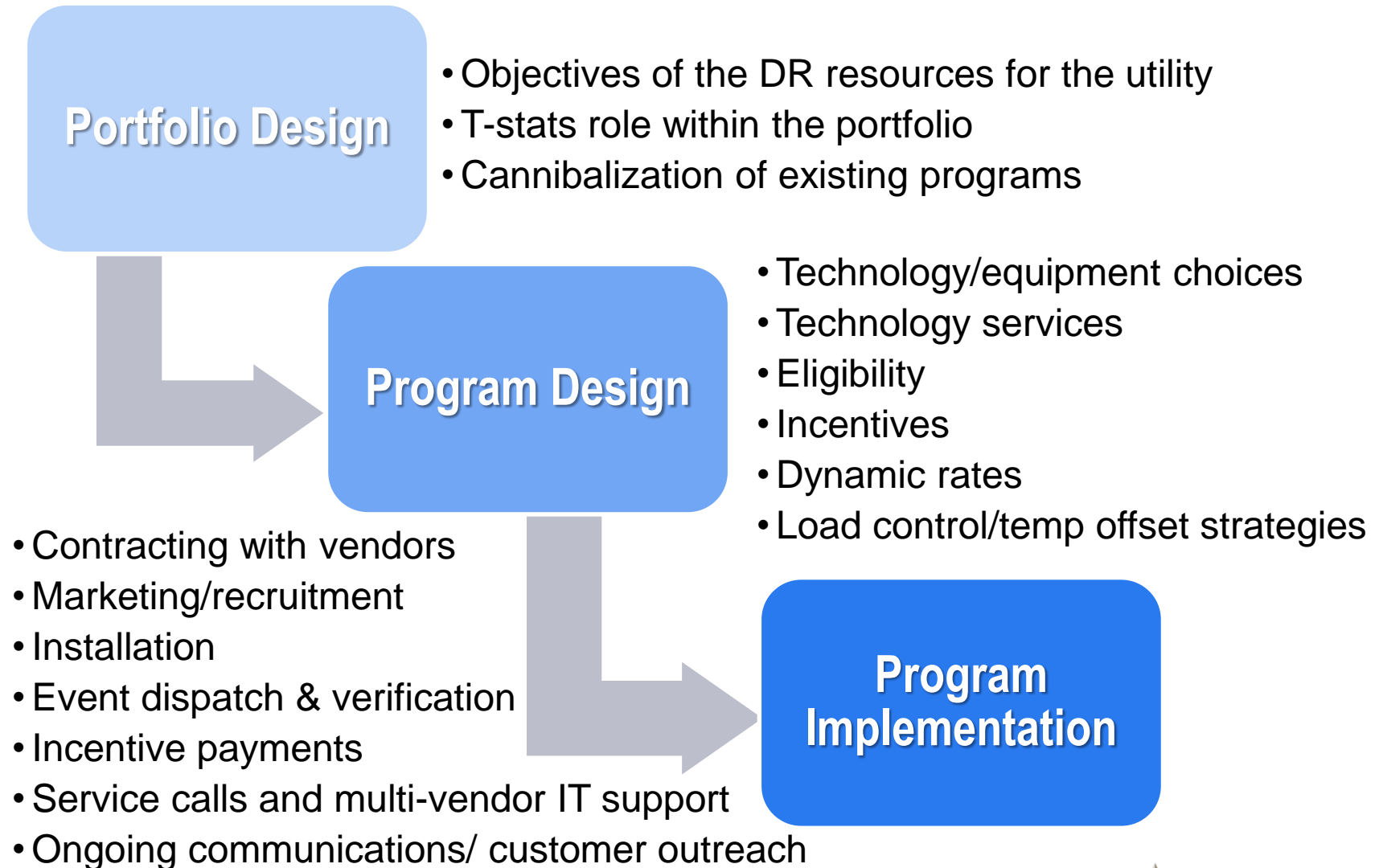


Thermostats or Switches?

Advantage Goes To...

Topic	Switches	T-stats	Comments
Installation	✓		Need to get into house for t-stats; wiring incompatibilities
Cost	✓		T-stats more expensive; install labor more
Comfort/Opt-outs	✓	✓	Comfort control & temperature thresholds with t-stats; switch customers don't notice or opt out
Customer Engagement		✓	T-stat enables valued customer services; Fosters online engagement with utility
EE/DR convergence		✓	Some EE savings due to programming; 2-way and self-learning can increase and ensure savings
Reliability – short term	?	?	Similar if by paging; WiFi t-stats may go offline, but utilities know, and self-correcting; Switch failures over time
Reliability – long term	?	?	Switch inspections needed; paging networks in decline; Will customers want shiny new t-stat in 5 years? WiFi?

Making Smart Thermostats a Reality



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