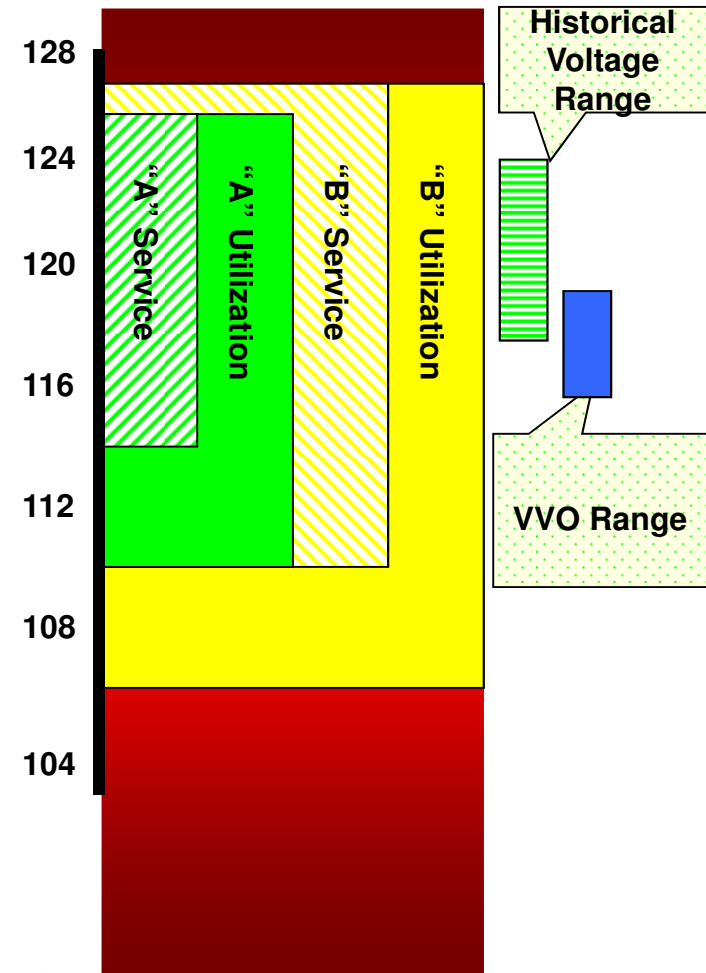




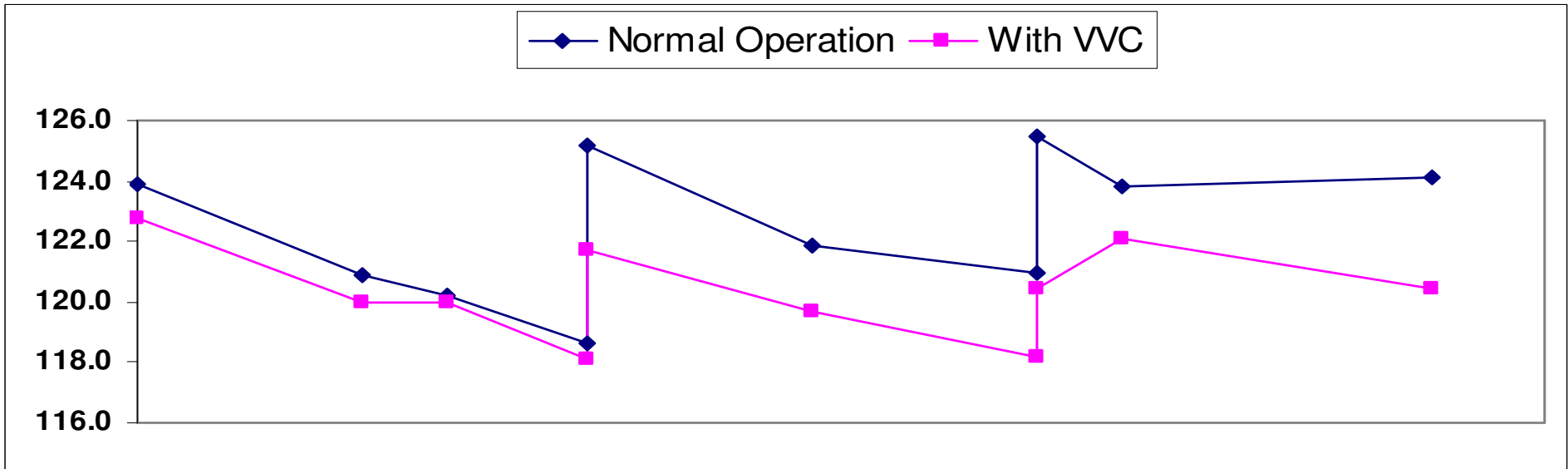
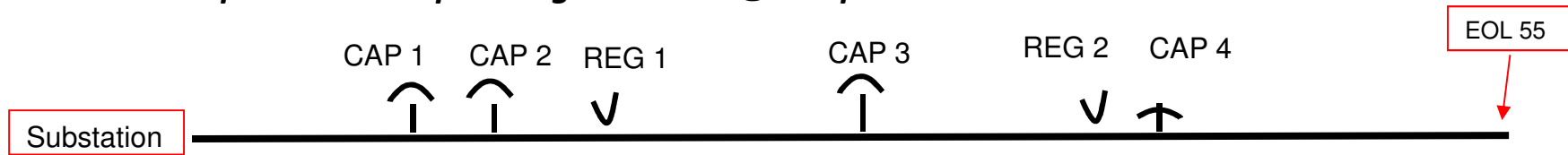
# Energy Efficiency Achievement Through Volt Var Optimization



# AEP Ohio: Voltage Profile Case Study

Normal Operation = 7-23-10 @4:44pm

Volt Var Optimization Operating = 7-24-10 @4:44pm



# VVO Technology Works As-Expected

## AEP Ohio gridSMART Pilot

- ARRA Project
- 5 stations; 17 Circuits
- 60-day on/off cycling
- Battelle helped conduct study

Circuit Level Results Averaged Across 11 Circuits	Industry Experience	Battelle Projections AEP Ohio Project	Initial Results AEP Ohio Project
Customer Energy Reduction	2.0%	3.3%	2.9%
Customer Peak Demand Reduction	2.0%	3.0%	2 - 3 %

# Customer Demand and Energy Savings



1100 kW  
609,000 kWh



1067 kW  
590,730 kWh

***VVO reduces customer peak demand and energy consumption at the meter***

# VVO Benefits

## Effective Energy Efficiency (EE) opportunity

- Reliably predicable (average 2-3% demand & energy reductions; sometimes greater)
- Registered at the customer meter (lowering energy & demand usage, and customer bills)
- Automatic (no change in the consumer's premise, equipment purchases/uses, or behavior modification)
- Measurable with a relatively high degree of accuracy
- Immediately realized upon deployment of technology
- Cost-effective (passes common benefit-cost tests)
- Verifiable (independent 3rd party review)

## Flexible grid-modernization opportunity

- Can be done either in concert with a larger smart grid deployment, or independently
- Can be deployed incrementally to gain confidence in projections, and throttled as-needed to meet financial constraints
- Not proprietary; Several suppliers manufacture equipment and provide software

## Ancillary benefits

- Eliminates air emissions associated with the forgone energy production;  
Provides tool to help meet increasingly stringent environmental compliance requirements
- Creates new manufacturing jobs in building the equipment, construction jobs for deployment, and utility-sector jobs for operating the technology
- Provides a platform for future grid modernization that delivers greater visibility & control of grid operations; improving reliability and customer service; with relatively small incremental investment

# VVO Path Forward

## **VVO will simply not be deployed unless the policy barriers are addressed**

- Energy is being wasted every day that circuits are not Volt Var Optimized
- Situation will continue until policymakers address inherent challenges
- Need thoughtful policymakers & individual leadership to seize opportunity

## **Policy approach**

- Adopt VVO as qualified resource in meeting legislative & regulatory compliance for utility-sponsored EE/DR targets
  - Results are indistinguishable from traditional customer EE programs
  - Provides additional/supplemental compliance option
  - Help keep compliance costs low, thus maintaining policy support
- Utilize recovery mechanisms that are preferred by the respective state legislators & regulators for EE investments to address foregone utility revenues needed to cover the fixed costs of operations
  - Issue is common with all EE programs
  - State-preferred mechanisms (Net Lost Revenue Recovery or Decoupling) should be used where available to maintain consistency
  - Critical to ensuring utilities are not financially harmed as a result of pursuing EE

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## Questions?

Daniel Francis  
614-716-2540  
defrancis@aep.com