Metering By Example: Emissions Requirements and Energy Savings at GSA

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Background

GHG reporting and energy use reduction over 375.7 million square feet

Opportunities

- New Information Access
- Benchmarking / Best Practice Identification
- Cost Reductions
- Maintenance Improvements

Problems

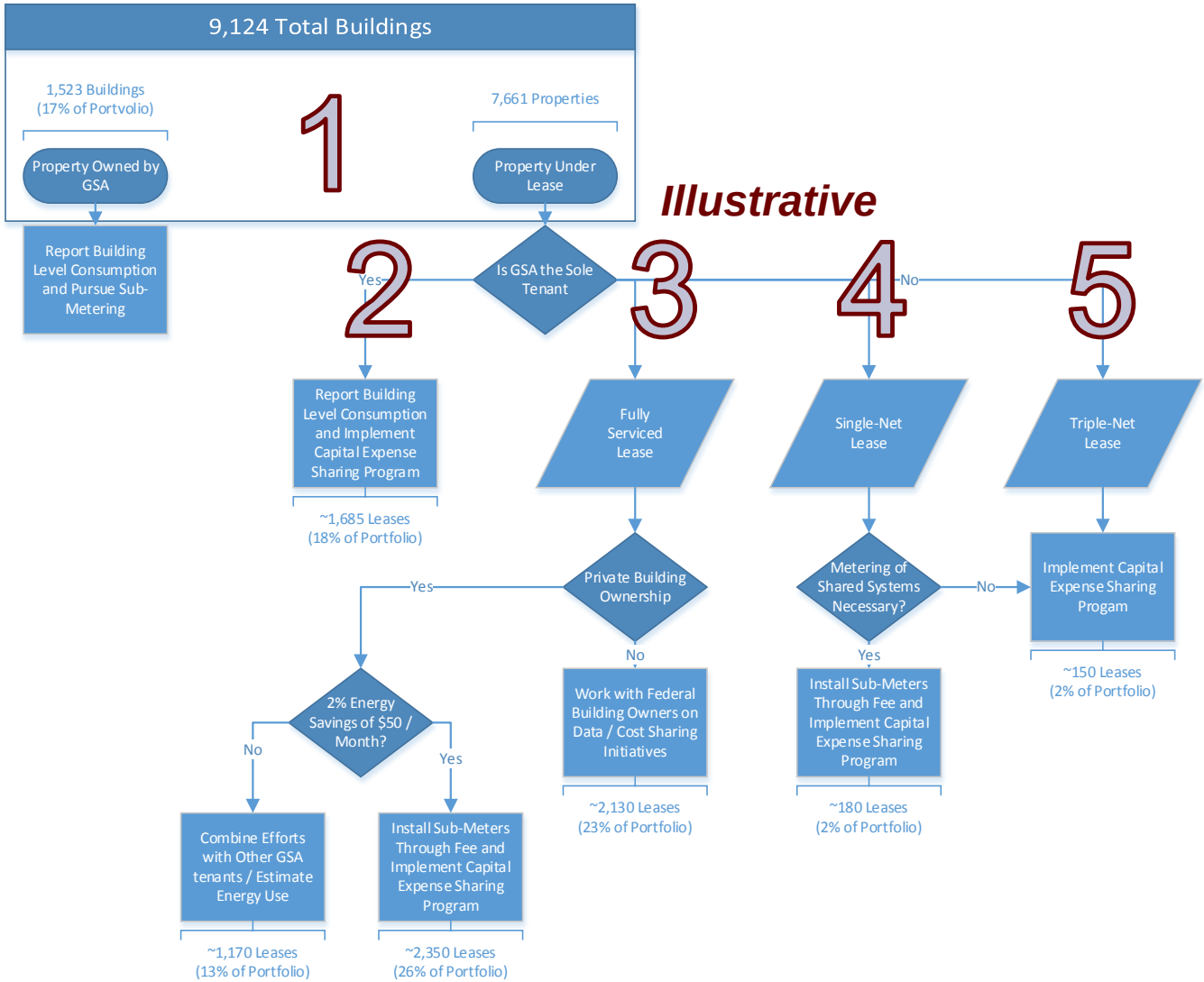
- Information Availability
- Shared Systems
- Split Incentives
- Converting Information to Action

What is the most cost effective metering strategy that will allow GSA to meet their reporting targets and how could this strategy be leveraged to reduce energy use?

Proposed Solution – Decision Tree

Key considerations:

1. Leased vs. Owned Buildings
2. GSA as Sole / Majority Tenant
3. Fully Serviced Lease
   a. Private vs. Federal Ownership
   b. Expected Utility Costs
4. Single-Net Lease
   a. Shared Systems Metering
5. Triple-Net Lease

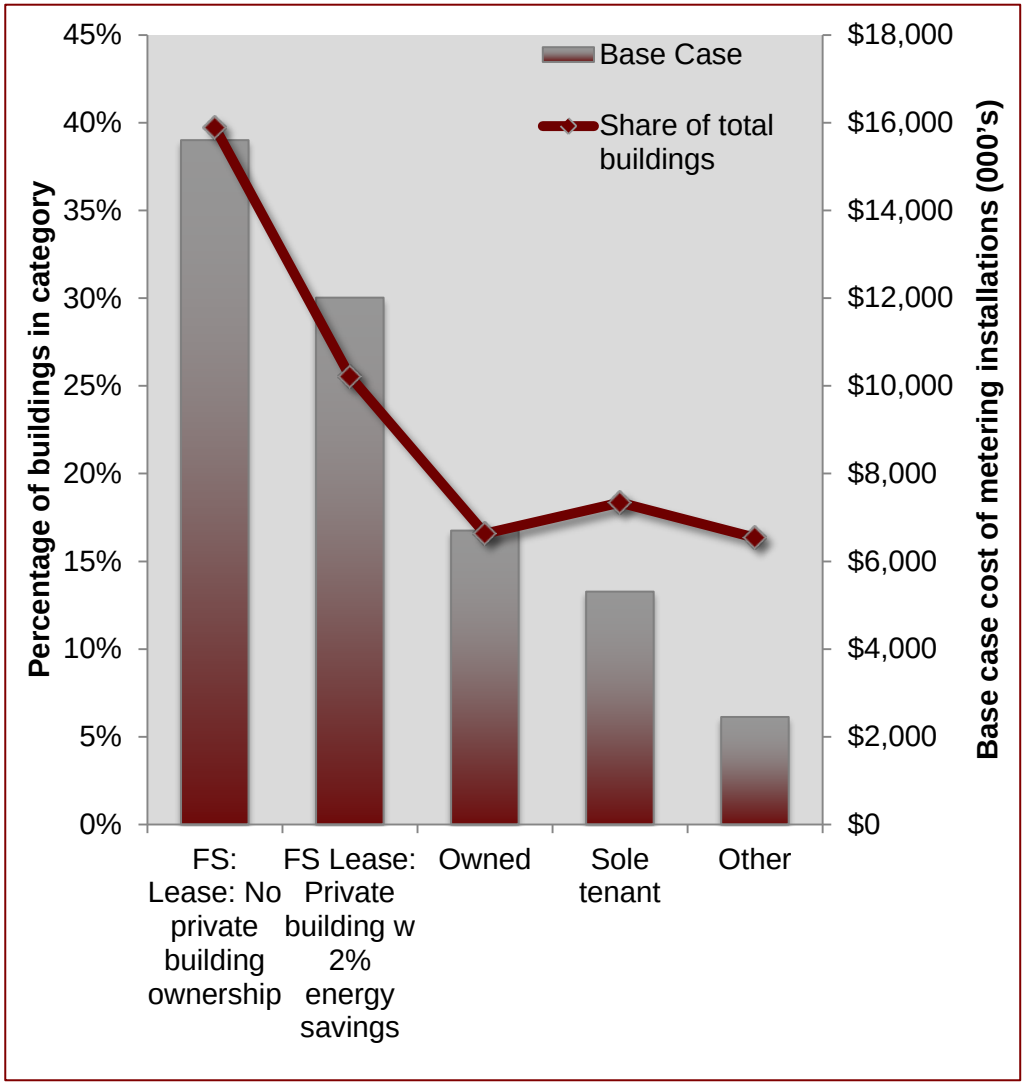


Improving metering and reporting

GSA-owned facilities	Fully-serviced Leases	Single Net Leases	Triple-net Leases
• Any combination of sub-metering, equipment upgrades and software installation may be used if financing can be arranged • Target high payback buildings first: those that are large (>50,000sqft), lie in high energy cost states (like CA, NY) and are in good condition (class A or B)	• Federal ownership: Negotiate with federal partner to determine an energy reporting/saving plan through sub-metering and share capital costs • Private ownership: Modify lease terms to include a monthly amount for passing through meter installation costs and subsequent energy savings	• Work closely with land-lords to get existing energy use data or modify lease terms to incentivize meter installations through capital expense sharing • If the leased facility pays for energy directly to the utility (13% of all leases), it should partner with the utility in demand-response or smart-metering programs	• Due to considerable access and control over energy data, they can engage in capital expense sharing programs with the land-lord to promote the implementation of building energy efficiency measures

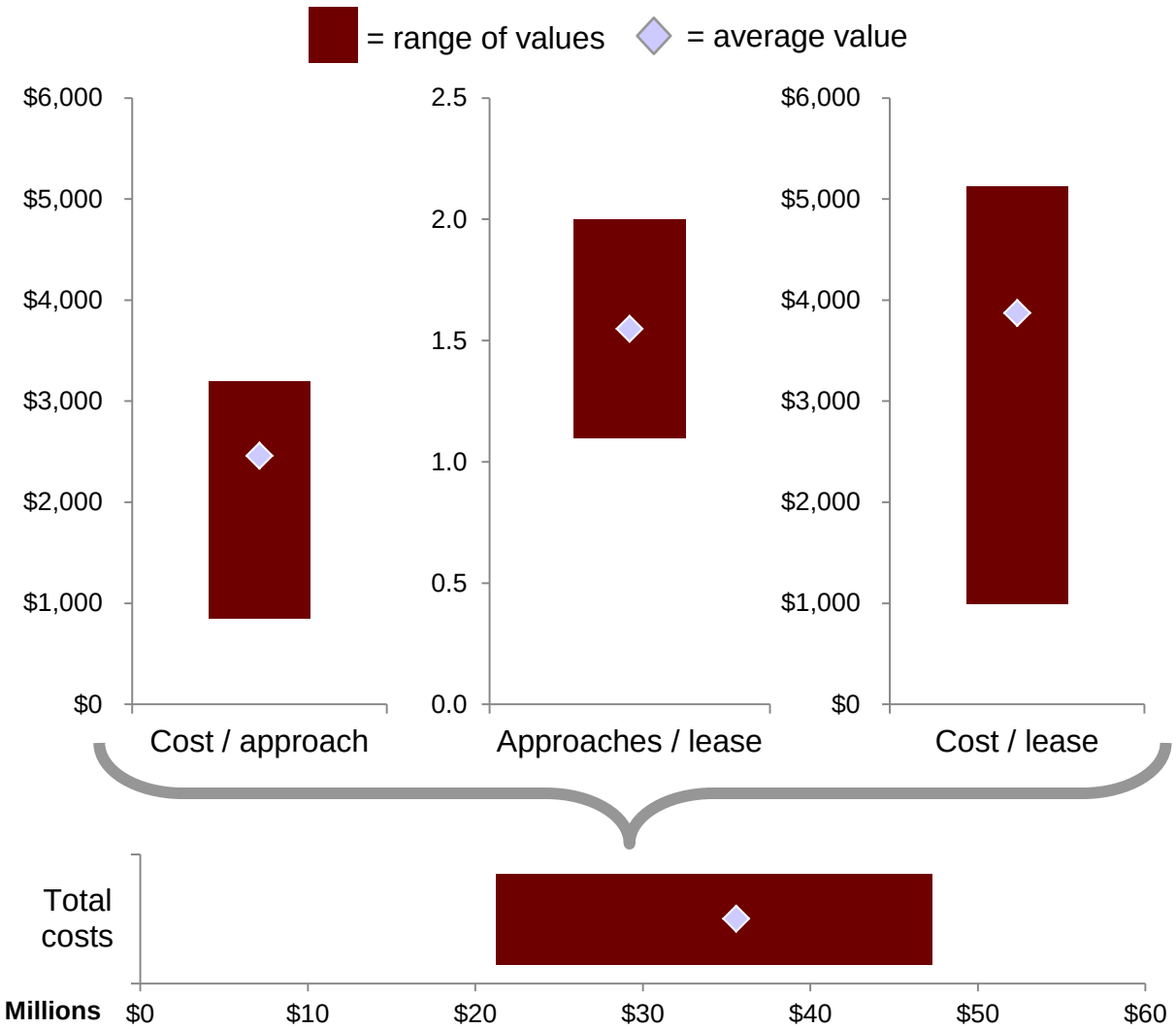
Improving metering and reporting

- New meter installation can have an initial effect of saving up to 2% of energy due to the ability to understand usage patterns
- Metering can further save up to 5% of energy through improved awareness among facility occupants
- Metering should ideally be followed by energy audits, equipment upgrades, HVAC optimization using software solutions, occupancy sensors for lighting etc. to maximize benefits
- Measures like occupancy sensors can reduce upwards of 20% of lighting load and HVAC optimization solutions can reduce HVAC load by 5-25%
- Scope three emissions mainly include business travel and electric transmission losses, and may be lowered by telecommuting or indirectly through reduced energy usage due to metering



Metering by Example: GSA

Value and Risk



Value:

- Initial implementation cost estimated from $21-48 million
- Savings from metering alone estimated at $10-15 million / year based on locations where GSA pays utility bill directly
- Payback period of 2-5 years

Benefits:

- Monetary: decreased energy bills
- Intelligence: access to new data on energy use
- Environmental: decreased greenhouse gas emission, waste elimination, sustainability
- Leadership: trend setter in the energy monitoring and efficiency space

Risks:

- Incentivizing landlords
- Fewer ready benefits in newer buildings
- Project buy-in from stakeholders
- Wide range of project costs, with potential for unexpected budget overruns

Implementation

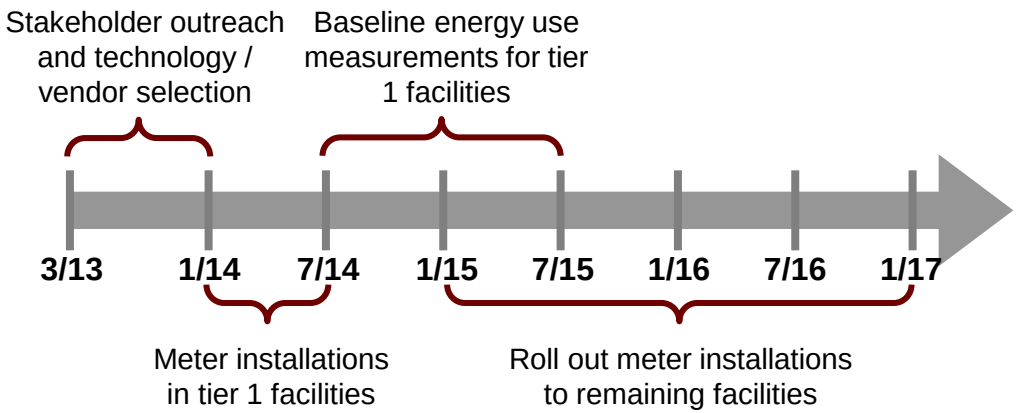
Project Financing:

- Key challenge: aligning incentives across GSA, tenants and building owners
- Easiest with direct cost-savings feedback (e.g. lower bill, savings through accelerated depreciation)
- Alternative financing also to be considered

Communication:

- Behavioral benefits driven by inter-office competition so implementation communication will be critical
- Regional PEMs to provide guidance on decision tree analysis to SSOs and FEMs, and ensure overall consistent implementation

Implementation Timeline:



Alternative Financing Options:

PACE bonds:

- Financing from municipal governments for "green" energy improvements repaid over time through a higher-assessed property tax
- Repayment requirements stay with the property on sale, reducing moving risks

Green revolving loan fund:

- Geared for relatively small investments with repayments, driven by energy savings, re-funding the loan pool on a revolving basis

Local utility efficiency improvement funds:

- Financing for metering can be lumped in with other infrastructure improvements or negotiated separately if on a large scale

ESPC with ESCO:

- Partner with local ESCO to develop broad energy-savings plans, including metering
- Cost of meter upgrades to be lumped together with more direct energy-saving improvements
- ESCO fronts the money and guarantees that the energy bill savings will cover the cost of repayments

Metering by Example: GSA

GSA Project Team

Alexander Frank

Policy Wonk

Alex Frank is a former environmental consultant working with energy sector clients on environmental compliance issues. A Biology major from Boston University he is known for his wetland identification skills and homebrewing prowess.

GSA Project Team

Ben Mactiernan

Powder Hound

Ben is an environmental engineer who used to work for Rio Tinto in the greenhouse gas and energy efficiency team. Whilst there is still snow on the mountains before global warming truly takes hold, Ben plans to spend as much of his free time snowboarding as possible.

GSA Project Team

Shruti Mathure

Metering Whiz

Shruti is a former engineer from the electric utility sector in the Midwest. An electrical engineering major from Mumbai University and Clemson, she makes a mean curry and loves to sail on big lakes when the weather's just right.

GSA Project Team

Hans Stege

Big Oil Rep

Hans Stege is a former oil and gas consultant with an emphasis on downstream oil in the former Soviet Union markets. He is an avid euchre player and a devoted Green Bay Packers fan (RIP Hawk and Dove).