



Building Efficiency Program Workshop

June 12, 2019

Agenda

- Introductions
- Project Background & Goals
- Core Topics
 - Benchmarking & Discussion
 - Auditing & Local Case Study
- Table Activity
- Next Steps



Goals and Outcomes

- Understanding of the Brisbane Building Efficiency Program
- Discussion on core topics, including
 - Benchmarking
 - Energy auditing
 - Retrocommissioning
- Obtaining input from YOU, the key stakeholders
- Wrapping up with clear next steps



Who's in the room?

■ Introductions & Stakeholder Roles

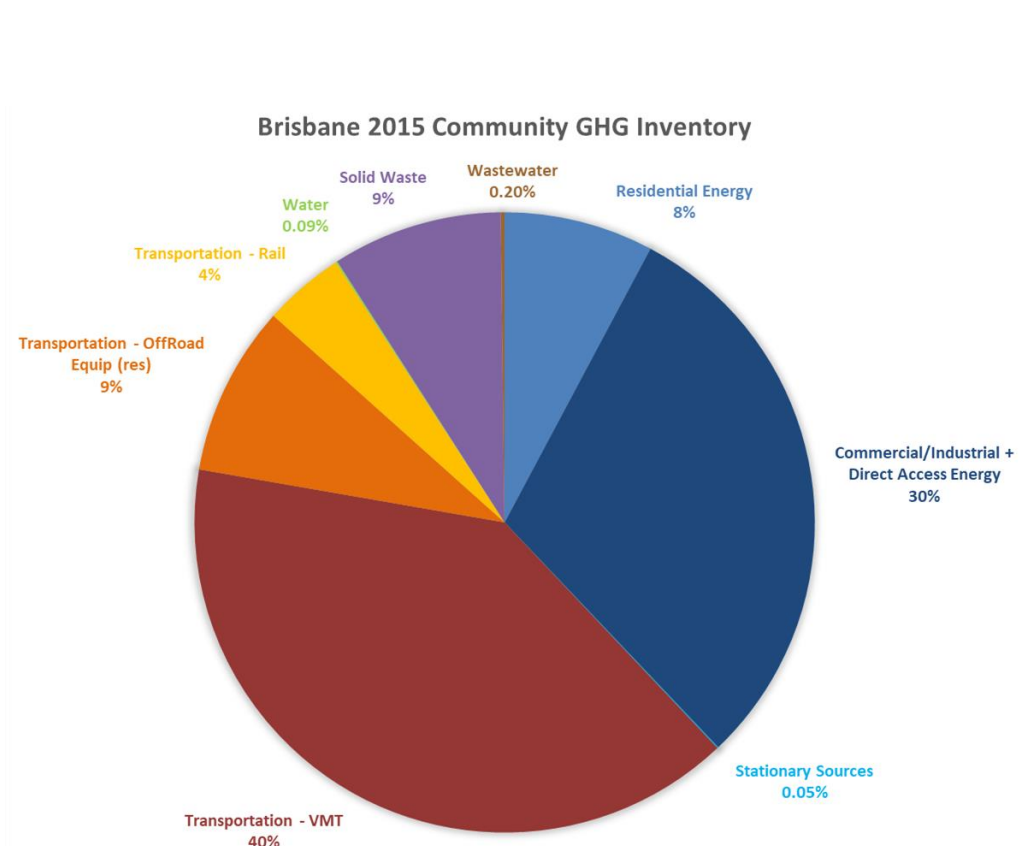
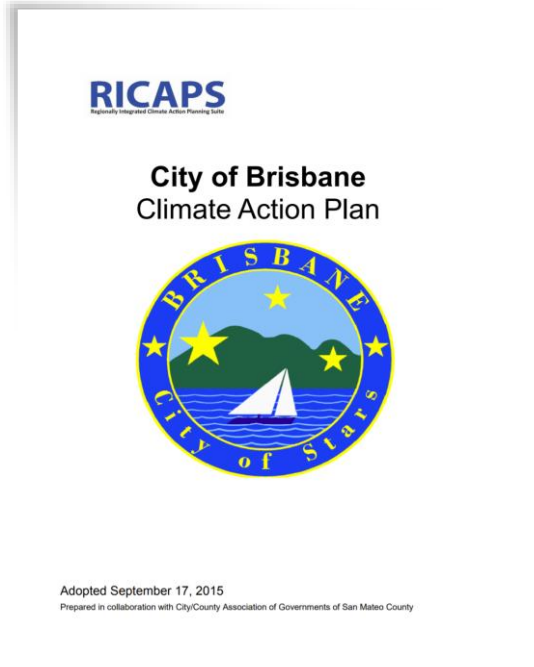
- What is your interest in the Brisbane Building Efficiency Program?
- What is your experience with benchmarking or auditing?

■ Stakeholder Types

- City staff & Council members
- Environmental organizations
- Local building/business owners
- Industry professionals
- Regulatory agency & utility reps



Background



Connecting Brisbane's 5 Values with the Ordinance



Safe Community

Safe Buildings + Energy + H2O



Community Building

Meeting Shared Goals



Ecological Sustainability

Built Environment Impact



Financially Prudent

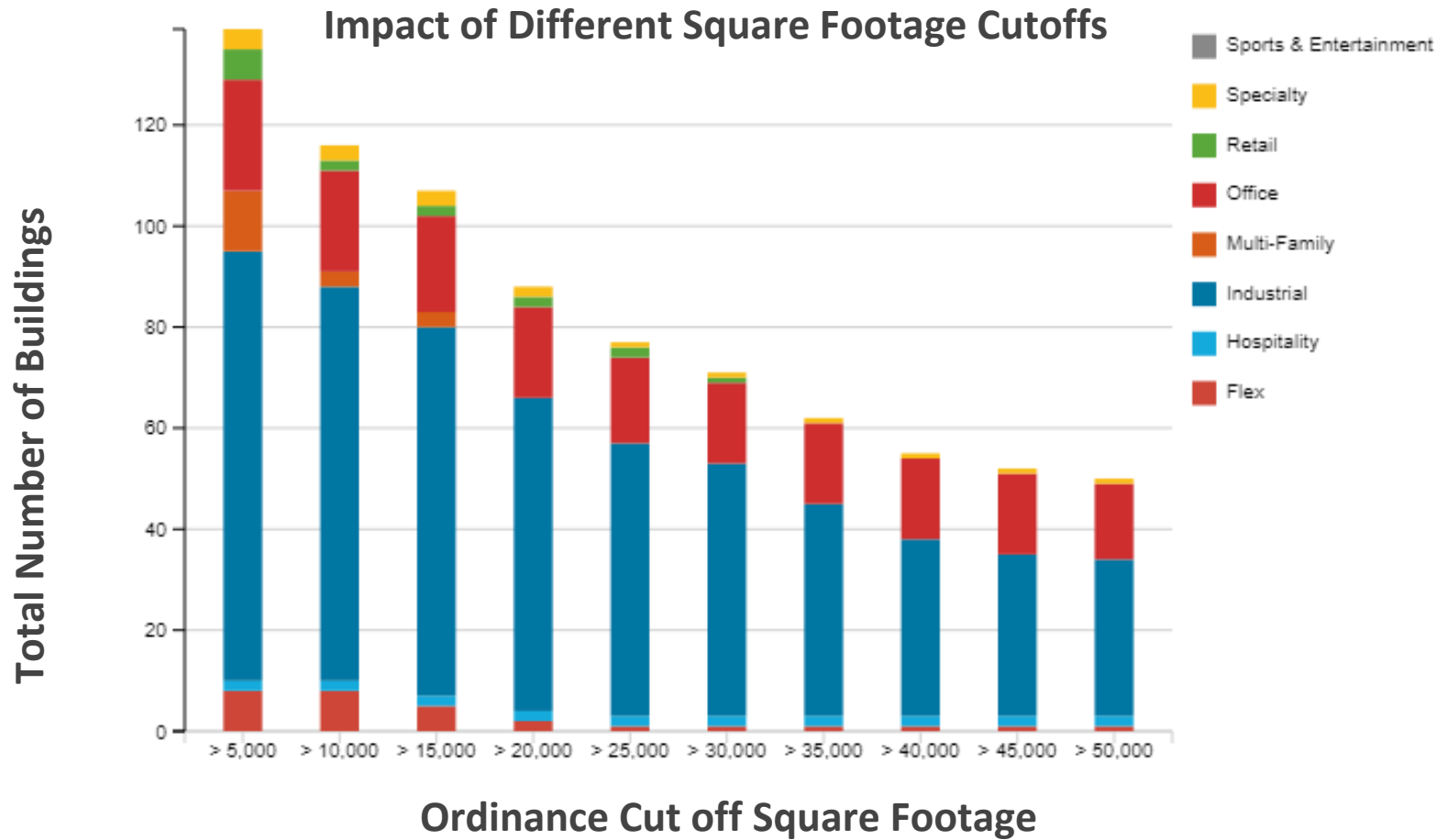
Shared Economic Benefits



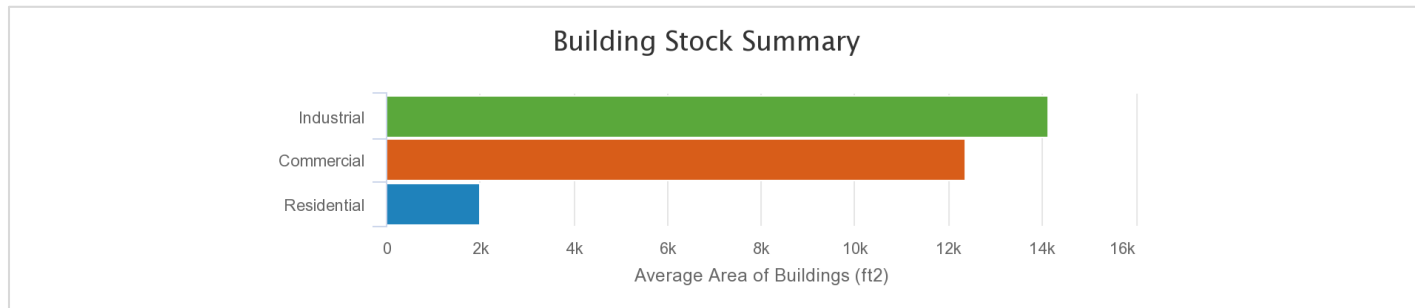
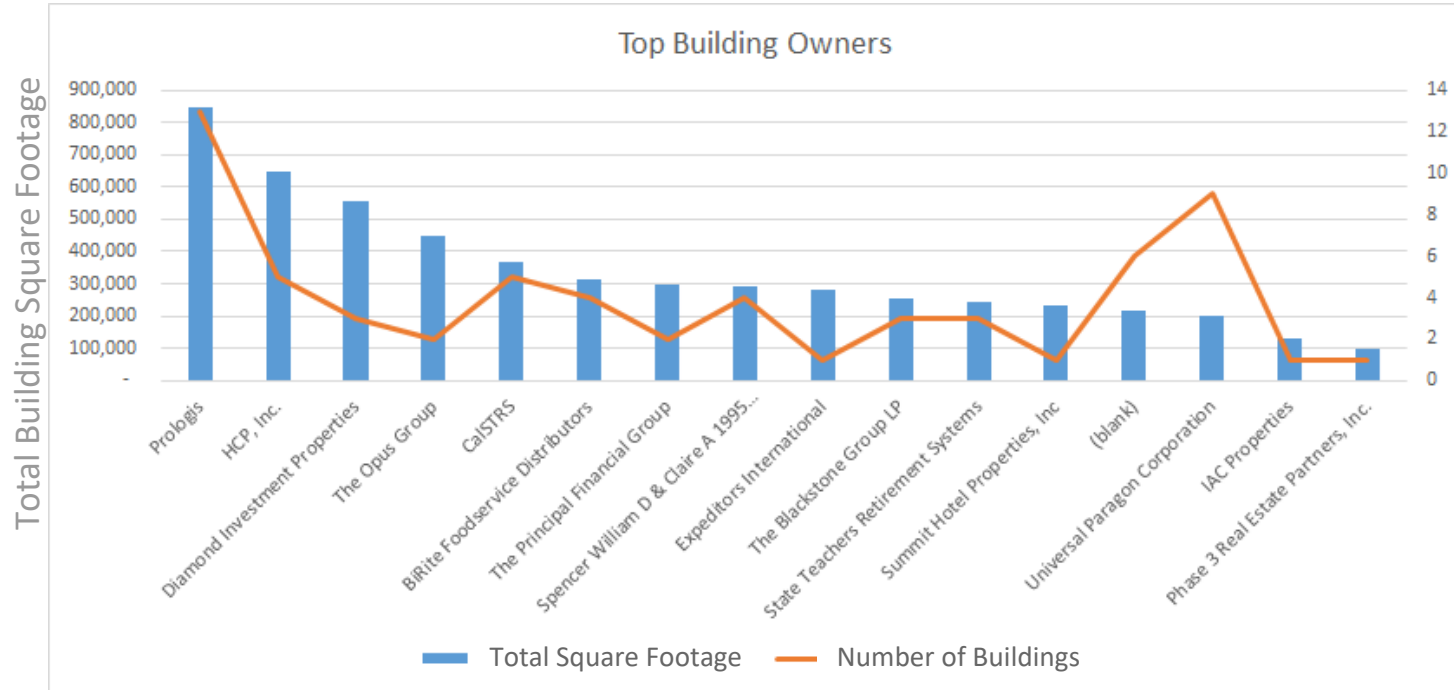
Economic Development

Job Creation + Productivity



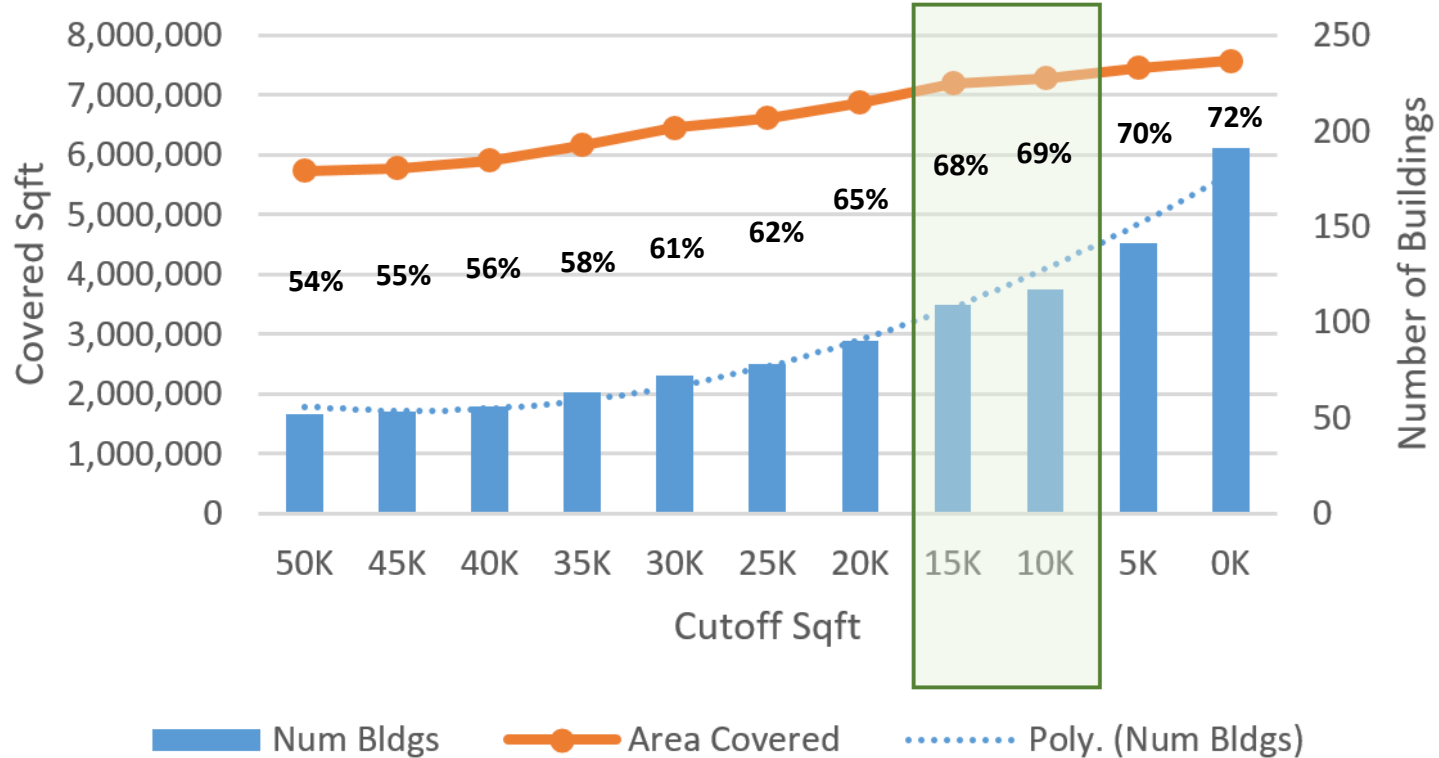


What type of buildings are in Brisbane?



Building Owners & Average Building Size

Number of Buildings vs Covered Sqft



What size of buildings should we look at?

We see that we can reach 69% of building area (residential, commercial and industrial) in Brisbane if we chose a 10,000 sf cutoff for the benchmarking ordinance.

Recap of Workshop 1 (April 9)

Topics covered

- Benchmarking concepts
- Benefits of efficiency
- Feedback

Feedback Overview

- Values
 - Decarbonization
- Challenges
 - Low Return on Investment
- Best Practices
 - Free energy assessments





Let's Talk About Benchmarking



Benchmarking: Getting on the Scale

Benchmarking is the first step in understanding your building; it's setting a baseline.

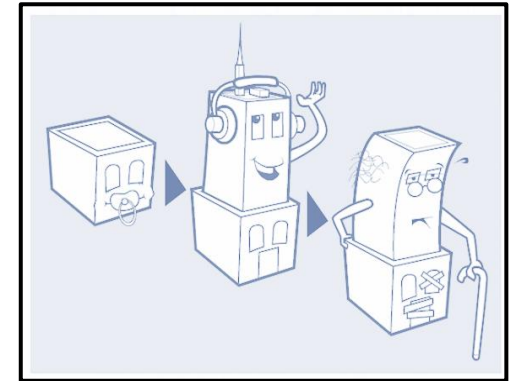


How to Think About Benchmarking

It's all about **Comparisons**



Self



Peers

Scenarios

These identify opportunities to save and help document those savings

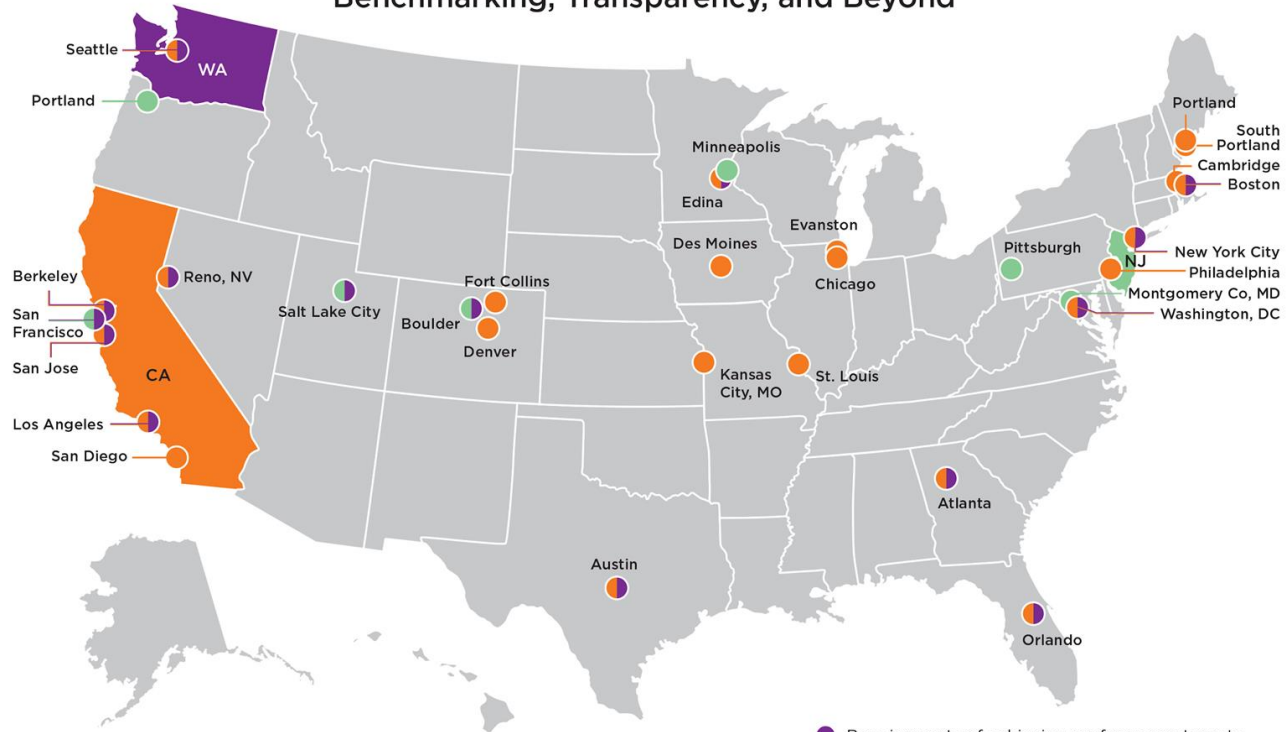


How is Benchmarking Used?



Who else is doing this?

U.S. City, County, and State Policies for Existing Buildings: Benchmarking, Transparency, and Beyond



- Requirements of achieving performance targets or completing additional actions
- Benchmarking policy for public, commercial, and multifamily buildings adopted
- Benchmarking policy for public and commercial buildings adopted



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Proposed Benchmarking in Brisbane

- 10,000 sqft cutoff
- Multifamily, Commercial and Industrial
- Use Portfolio Manager
- Annual Reporting
- Start May 1, 2021
- Enhanced Rigor to support quality reporting and workforce





Audits & Retrocommissioning (RCx) Intro



Audits & RCx Intro

An **energy audit** is an assessment of a building's energy systems to identify opportunities to save energy and money

Think of energy audits as physical for your building



Benchmarking
Stepping on scale

Audit
Physical

RCx = Exercise
Retrofits = Diet

Saving Energy
Losing Weight

Audits & RCx Intro

Energy audits produce a list of energy conservation measures (ECMs) with associated costs and savings

ECMs can be implemented by contractors



Audits & RCx Intro



Retrocommissioning (RCx) typically refers to simple fixes to ensure a building's systems are operating the way they were designed to

Examples:

- checking your thermostat is programmed appropriately for temperature, timing
- making sure your AC isn't running all night
- making sure lights are on during the day

**Audits &
Retrocommissioning help
provide insights and answers
for building owners and for
the City.**



2016 - Energy Efficiency Audit DoubleTree by Hilton San Francisco Airport North



Executive summary

Verdafero carried out a comprehensive energy audit to identify Energy Conservation Measures (ECMs) at DoubleTree by Hilton San Francisco Airport North.

The EnergyStar rating of the property at the time was 71. This means that it is better than 71% of comparable hotels across the nation.

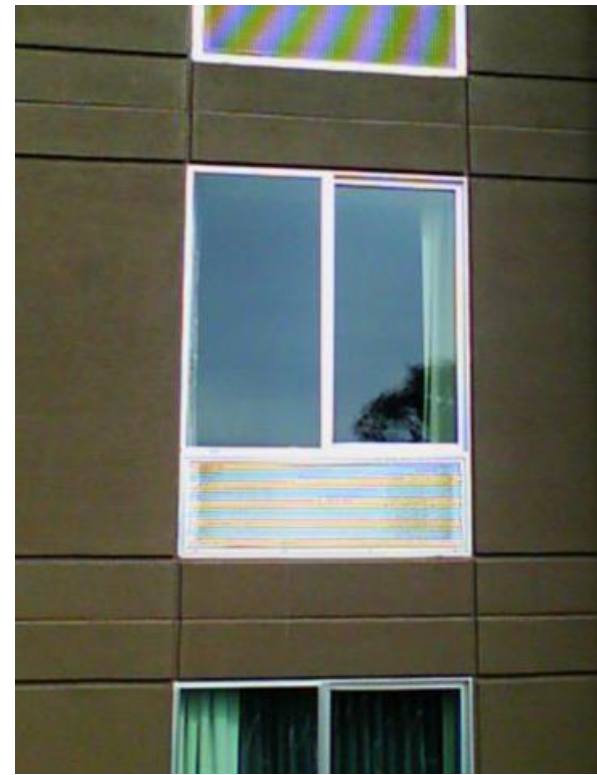
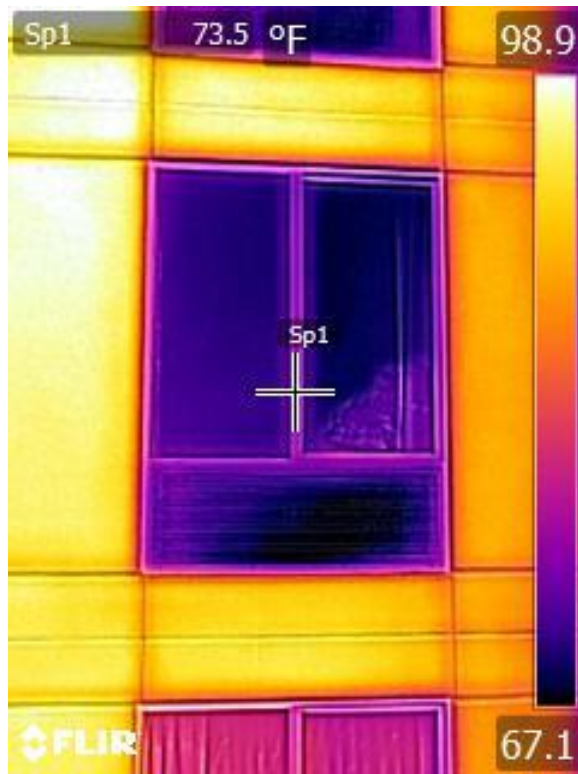
We identified several opportunities within the facility that could achieve estimated annual savings of \$60,780 adding approximately \$810,399 of value to the asset with a 7.5% capitalization rate.

If these savings are realized they would increase the EnergyStar rating or efficiency of the property to 87.

Typical ECM Table

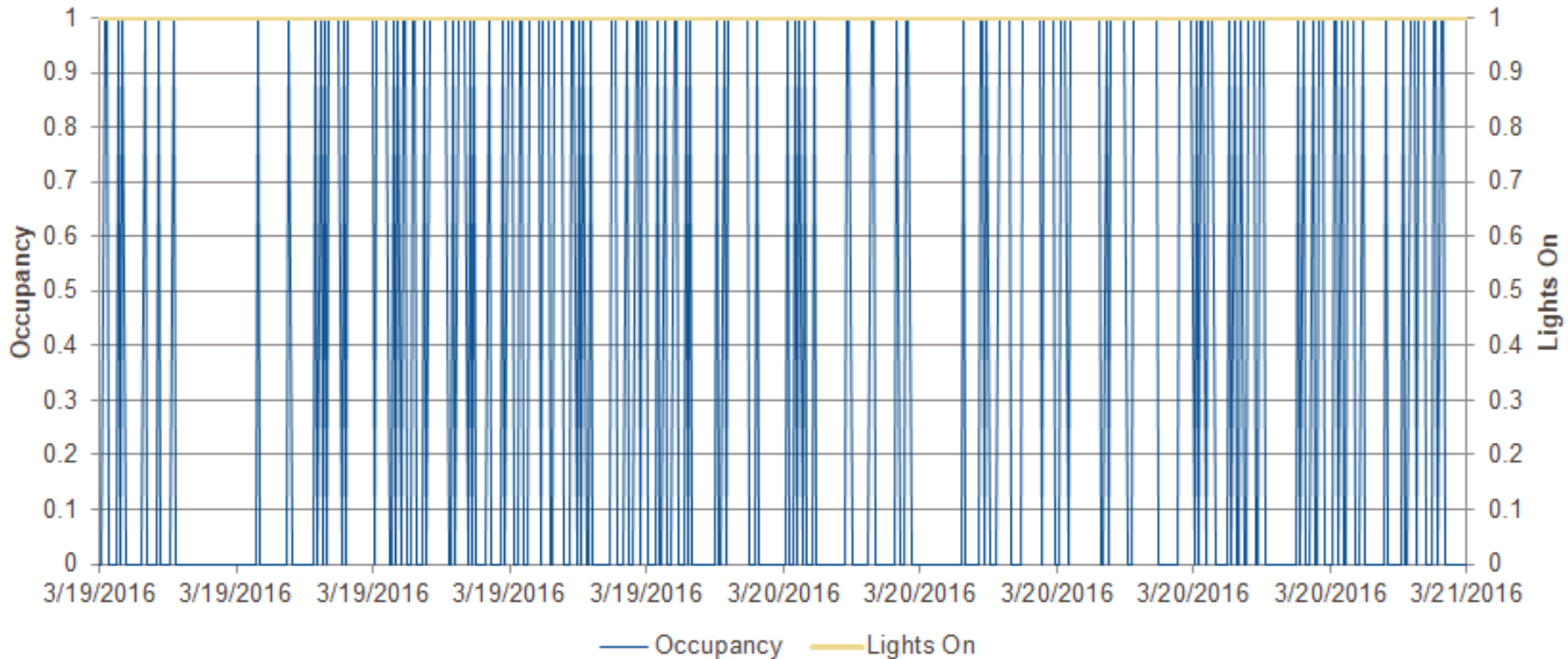
ECM	Annual Savings (\$)	Annual Utility Savings (kWh)	Annual Carbon Savings (lbsCO ₂ e)	Est. Measure Costs (\$)	SPP (months)	ROI (%)	NPV (\$)	Asset Value Increase (7.5% cap rate)
ECM 1 – Install Window Film	\$9,582	62,220	42,471	\$26,500	33	36%	\$47,835	\$127,760
ECM 2 – Fluorescent bulbs	\$5,609	36,347	24,810	\$832	2	674%	\$27,264	\$74,787
ECM 3 – Incandescent bulbs	\$320	2,075	1,416	\$3	0	10667%	\$1,601	\$4,267
ECM 4 – CFL bulbs	\$4,968	32,194	21,975	\$1,598	4	311%	\$23,288	\$66,240
ECM 5 – Candelabra bulbs	\$1,098	7,113	4,855	\$32	0	3431%	\$5,467	\$14,640
ECM 6 – Staircase Lights	\$552	3,574	2,440	\$102	2	541%	\$2,661	\$7,360
ECM 7 – Bollards	\$1,372	8,894	6,071	\$741	6	185%	\$6,134	\$18,293
ECM 8 – Outdoor Spotlights	\$2,643	17,127	11,691	\$985	4	268%	\$12,255	\$35,240
ECM 9 – Parking	\$5,580	36,157	24,681	\$2,079	4	268%	\$25,871	\$74,400
ECM 10 – Occupancy Sensors	\$1,509	9,777	6,674	\$360	3	419%	\$11,344	\$20,120
ECM 11 – Economizers	\$7,087	46,021	31,414	\$13,500	23	52%	\$23,154	\$94,493
ECM 12 – PTAC	\$12,721	82,603	56,384	\$32,550	31	39%	\$42,267	\$169,613
ECM 13 – Kitchen Exhaust Hoods	\$139	1,737	1,186	\$332	29	42%	\$781	\$1,853
ECM 14 – Laundry Equipment	\$7,600	0	0	\$0	0	N/A	N/A	\$101,333
Totals	\$60,780	345,839	21,975	\$79,614	16	76%	\$229,922	\$810,399

Thermal heat map of typical guest room window



Typical Audit Finding

Lobby Bathroom Occupancy



Interesting ECM Examples

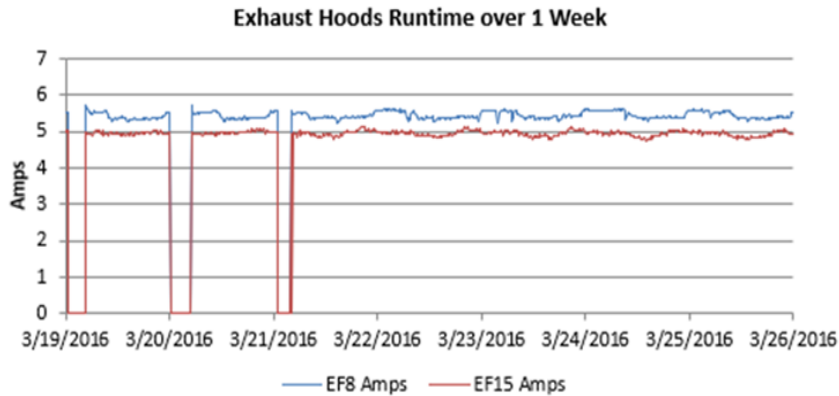


Figure 36 – Kitchen exhaust hoods runtimes between Saturday Mar 19th - Friday Mar 26th.



Figure 37 – Kitchen exhaust hoods



Figure 31 – Example of a mechanically fixed outside air damper

Savings:		
Electricity savings:	30,681 kWh per year	
Annual Electricity charges:		(\$4,725)
Total Energy Savings		(\$4,725)
Costs:		
Estimated Economizer costs:	9 @ \$1,000 per unit	\$9,000
Estimated Installation costs:	9 @ \$500 per unit	\$4,500
Total Additional Costs		\$13,500
Total Costs:		\$13,500
Simple payback period:		34 Months
ROI (Return On Investment):		35.00%
NPV (Net Present Value):	10 yrs.	\$23,154

Table 15 – Economizer retrofit analysis table

Table Activity



Auditing Feedback Areas

- Frequency & timing
- Type of support needed (i.e. case studies, call line)
- Connection to financial incentives
- Information to implementation
- Which buildings report (same as benchmarking requirement?)
- Disclosing information
- Recognition opportunities



Next Steps

- ✓ Workshop 1: Goals and Outcomes
- ✓ Survey 1 - Benchmarking
- ✓ Workshop 2: Strategy and Options
- Survey 2 - Audits
- Study Session
- Planning Commission Feedback
- Open Space and Ecology Committee Feedback
- Council Presentation



Thank you!

Contact:

Adrienne Etherton

aetherton@brisbaneca.org

415.508.2118

Visit:

brisbaneca.org/building-efficiency-program

