

LEVERAGE TECHNOLOGY TO CREATE HEALTHIER SUSTAINABLE LIVING SPACES

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BC Care
Providers
ASSOCIATION



Objectives

- What is a healthy sustainable home?
- What's available in new technologies and how do they support healthier housing & sustainability goals?
- Review important considerations for implementation and the potential barriers
- Demonstrate how Facility Operations teams are using technology to optimize performance and meet sustainability goals

MATERIALS

and well-designed ventilation systems that promote good indoor air quality

SOUND INSULATION

and good double glazing to promote quiet and tranquil home environments

LIGHT

is optimised with generous access to daylight and sunlight and well-designed supplementary electric lighting

RESILIENCE

designed in, with homes able to adapt and respond to changing occupant requirements and future climate change

COMFORT

ensured, using passive design to prevent both overheating and excessive heating costs

SENSORS

that monitor indoor conditions and increase resident awareness

BEDROOMS

that promote healthy sleep, relaxation and respond to circadian rhythms

COLOURS

that promote balance, wellbeing and relieve stress and anxiety

SYSTEMS

are energy efficient and low-emission heating, cooling and ventilation systems with simple and user-friendly controls

SECURITY

is built in: home environments are safe and secure

STORAGE

and space provision to promote stress-free functional living

CONNECTED

to local amenities, public transport, and pedestrian routes to the wider community

LIVING SPACE

that provides stimulating environments for social engagement and play

WINDOWS

and layouts that maximise views out and natural ventilation opportunities

QUIET SPACE

provides settings for focused work, privacy, thinking, relaxation and reflection

KITCHENS

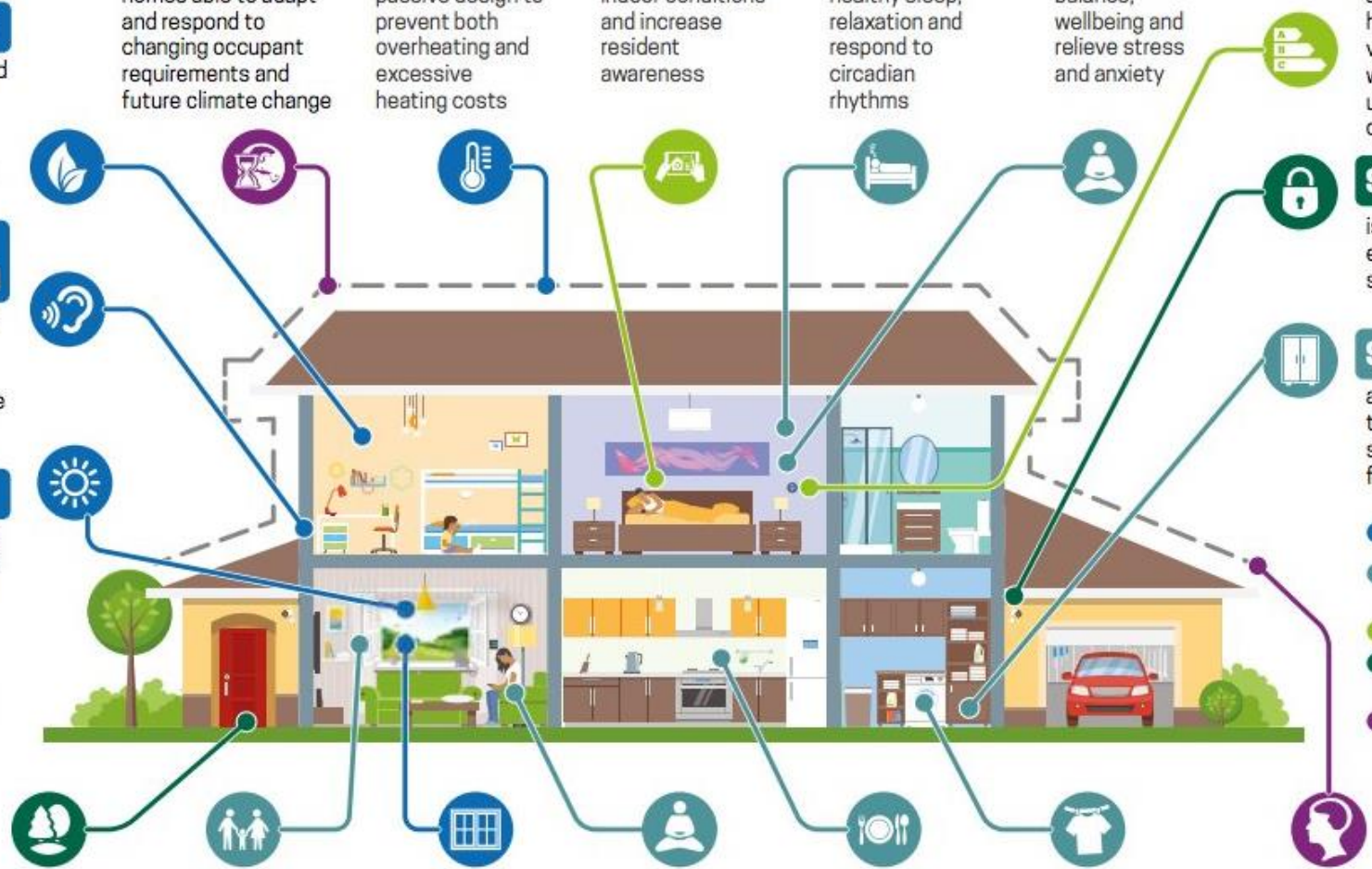
that promote positive family interaction and encourage healthy eating

LAUNDRY

provision to avoid moisture, mould growth and pollutant build-up within the home

FLOURISHING

is enabled: homes not only allow people to be physically and mentally healthy, but also provide opportunities to restore, uplift the spirit, and make people happy!

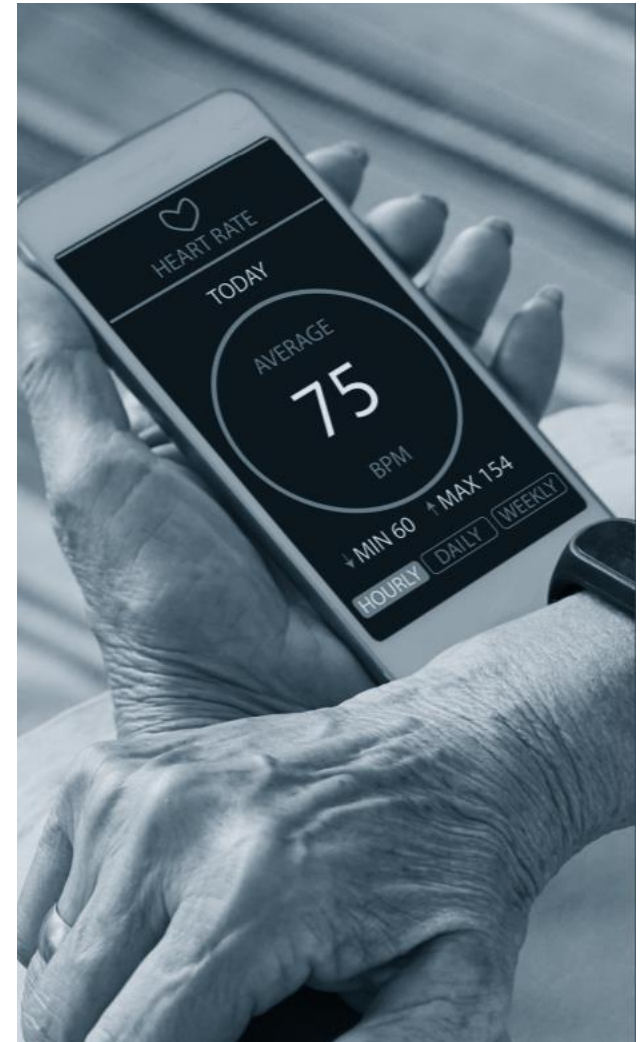


The Essentials of Healthy Housing



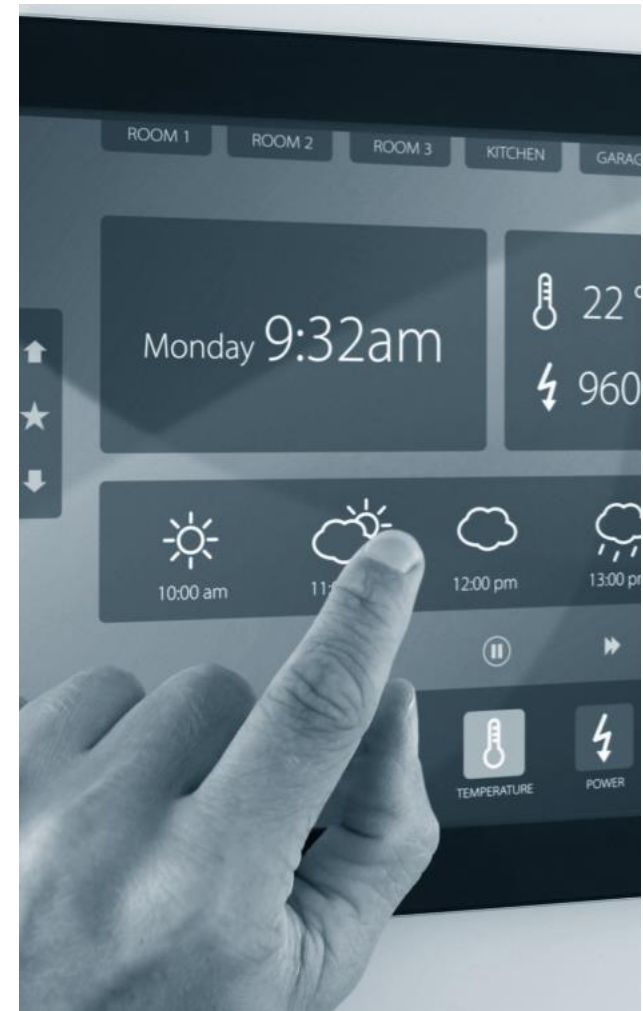
Technology Trends Impacting Healthy Housing

- Social connection via connectivity
 - Telemedicine
- Medication management through apps and wearables

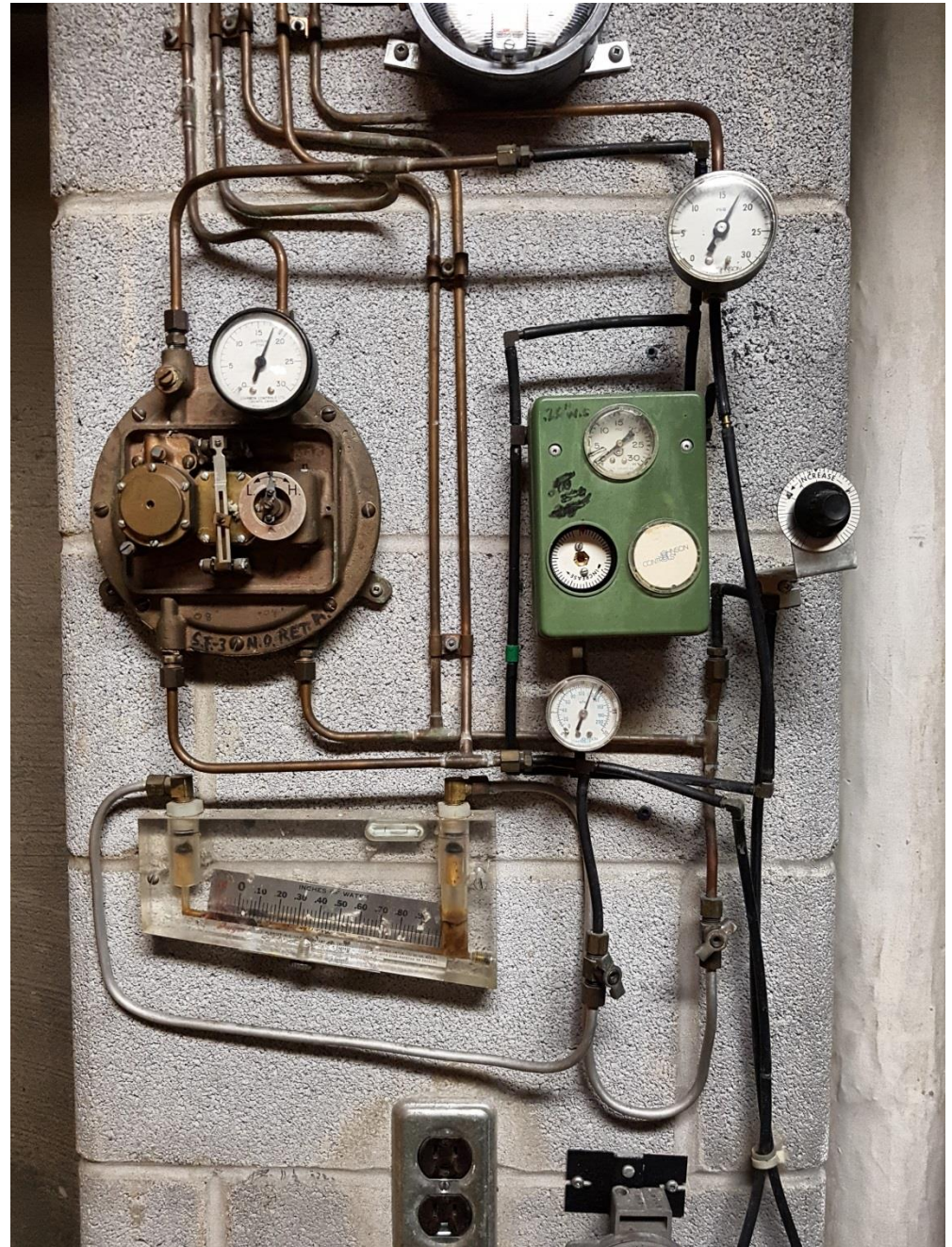


Technology Trends Impacting Healthy Housing

- PERS & GPS
- Video games & augmented reality
 - Lumosity
 - CogniFit
- Mobile devices for staff
- Voice activation & automation



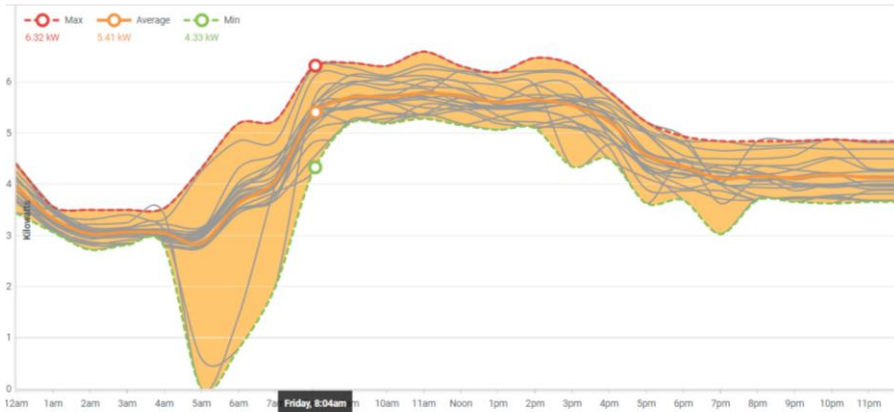
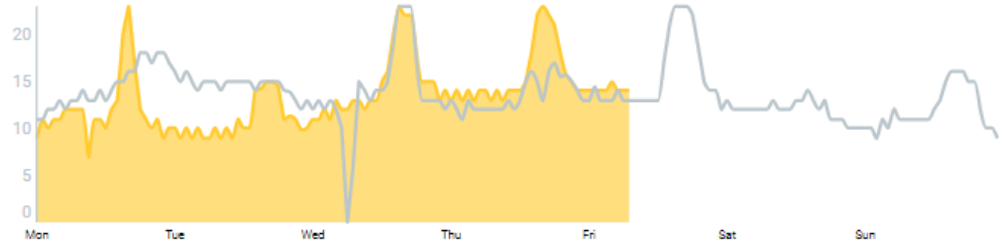
We want to
go from
this...



To this...

Fan 61 / This week

Electricity Previous period



Oct 27, 8am 2017

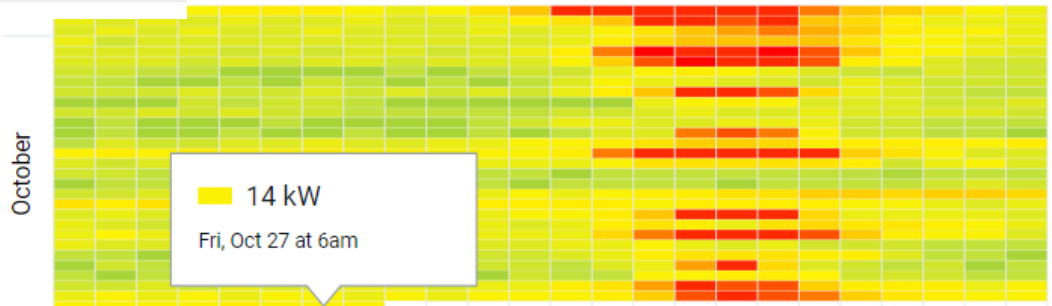
Oct 16, 12am–Oct 20, 8am 2017

14 kW

Difference

↓ 4.62 %

0 kW 6-10 kW 10-14 kW 14-17 kW 17-21 kW 21-24 kW



THINGS



ANALYTICS

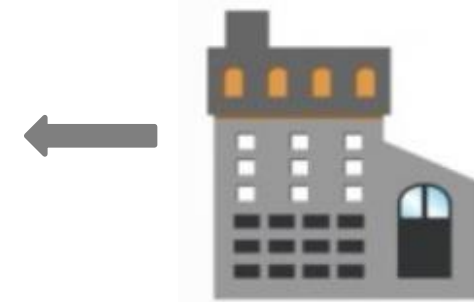
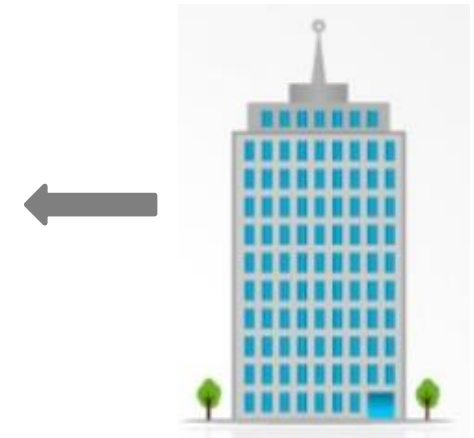
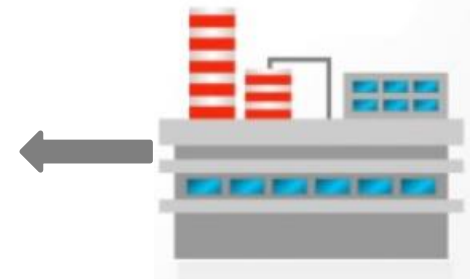


CONNECTIVITY



DATA

1001001
0101010
0101010



Why Smart Buildings?

- Use data and technology to make better decisions that lead to better outcomes for the residents, the building and the environment
- No more replacing like for like....we want to replace like for light years ahead
- Shifting from Energy Management to Sustainable Lifecycle Management – shift our perspective to long term investment instead from short term returns
- Innovative technologies allow us to make a necessary jump in meeting our 2030 and 2050 reduction goals

Pan-Canadian Framework on Clean Growth & Climate Change

- 4 Main Pillars:
 - Pricing carbon pollution;
 - complementary measures to further reduce emissions across the economy;
 - adapt to the impacts of climate change and build resilience;
 - and actions to accelerate innovation, support clean technology and create jobs.
- 2030 target is a **30% reduction below 2005** levels of GHG emissions.



Meeting Our Targets Together

Creating a collaborative environment for knowledge sharing and feedback between all stakeholders is vital in meeting our sustainability goals.

The Art of the Possible

- HVAC systems that self-help, call for service and never break down
- Net-zero facilities
- Fully integrated platform for end users and operations
- Machine learning software managing and discharging energy storage systems
- Asset tagging with real-time lifecycle management capabilities

First Step → Define the Desired Outcome

- The solutions must be driven by the needs of the project/facility
 - Don't let a vendor define the solution first
- There will be multiple solutions
- Open protocol is important for future-proofing
- During the planning stage, define what the analytics will change about your operations
 - What are you not doing now that you would like to do differently?
 - Where does the liability lie with this new information?

Important Considerations

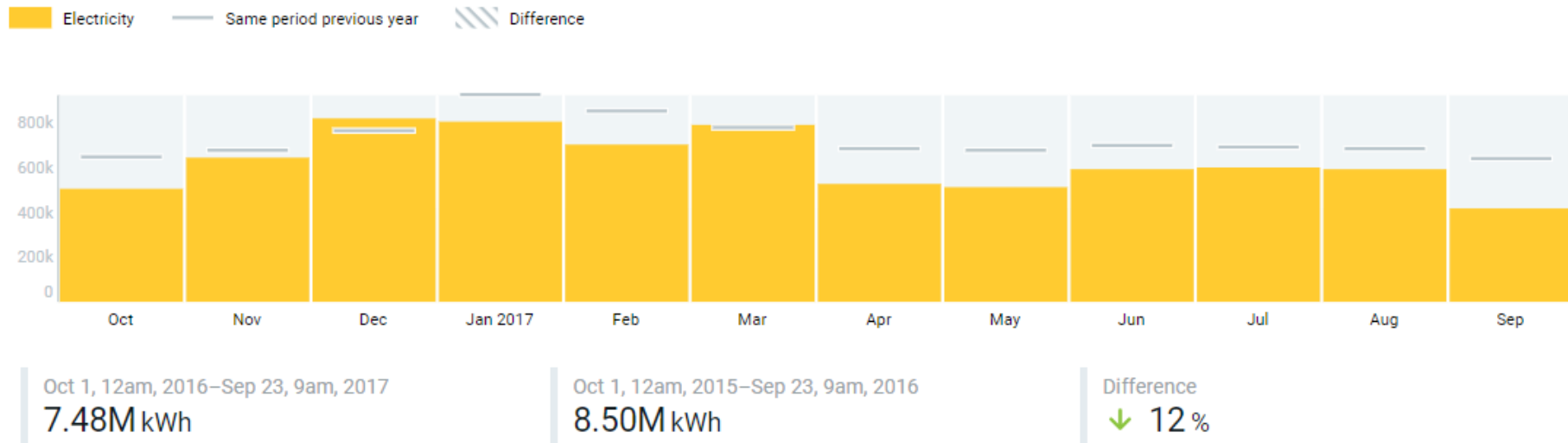
- What is your existing infrastructure and will it need to be upgraded?
 - Cloud based vs local network
 - Proprietary systems
 - Take stock of what you have before selecting anything new to make sure you're optimizing the existing systems
- Be sure to invest in practices that will drive adoption
 - Training pre and post adoption
 - Integrating into KPIs and incentivize goals and targets
 - Celebrating success – recognizing people who go above and beyond

Potential Challenges

- Existing infrastructure
 - Proprietary systems may be hard or cost prohibitive to integrate
 - Security for the network
- Cost to integrate
 - Verify all hardware fees, ongoing license and data storage fees plus what's included in customer support
- Buy in from necessary stakeholders
 - Include end users in the planning process
 - The potential team:
 - Facility Owner, IT, Facility Manager (BAS), Operations Team, Residents, Technology Vendor, System Integrators
 - What training will be needed?

Proving the Value

Electricity Consumption / Last 12 months



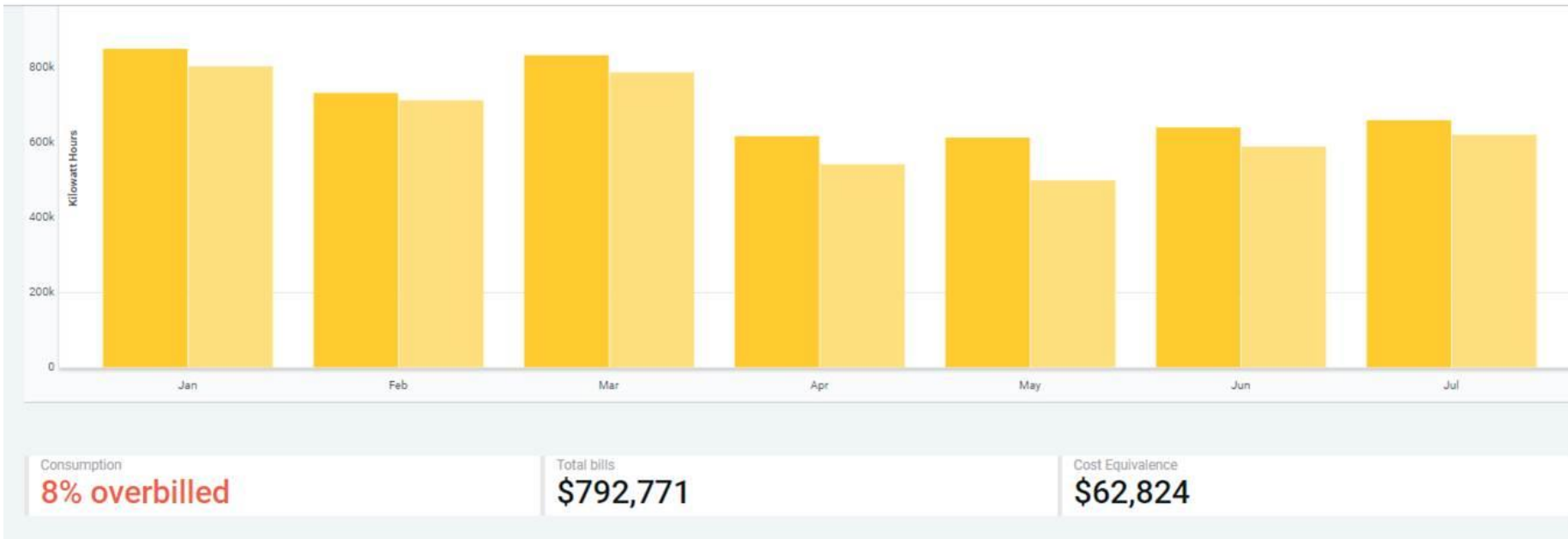
Additional submetering and setbacks resulted in **12%** consumption savings.

Constant monitoring and M&V identify opportunities each year.

Savings by Monitoring

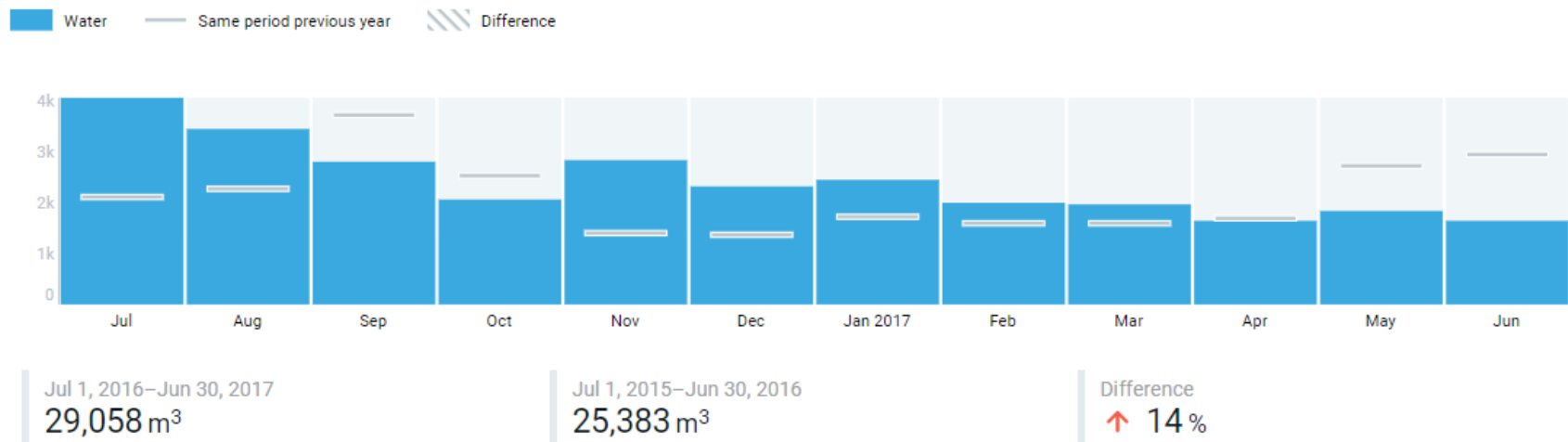
Small percentages in overbilling, left unchecked, can result in large overages in cost

Home / Apps / Bill Verification



What's Next?

Water Consumption / Jul 1, 2016-Jun 30, 2017

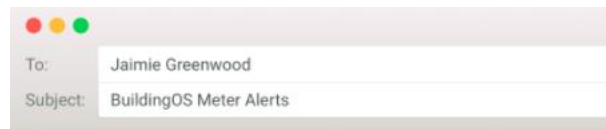


Water usage has increased by 14%.

Facility Manager has incorporated Energy Mgmt into budgeting → more submeters coming this year...

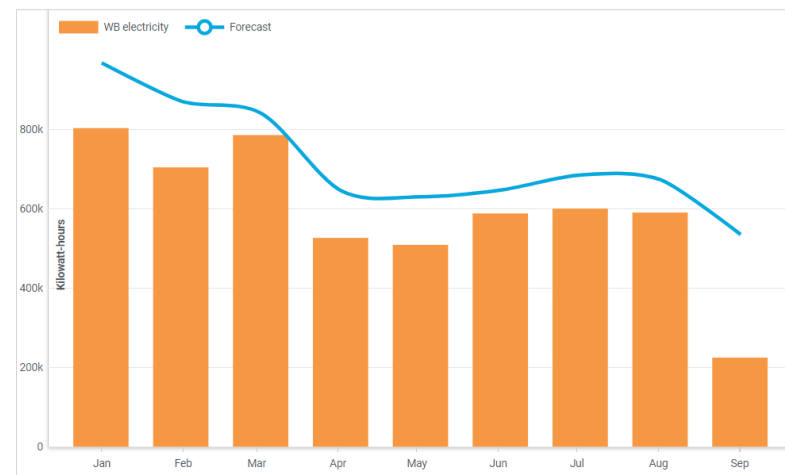
What can Facilities do with all this data?

- Provide the facility team with **real time notifications** for when consumption deviates from the target
- Provide regular **reporting** on performance, targets & bill verification
- Identify energy and water saving opportunities
 - **M&V** on savings



Recent Meter Alerts

Name	Condition	Timestamp
Demand spike	Exceeds 30.0 kW	Feb 6, 2017, 1:30pm
Demand spike	Exceeds 40.0 kW	Feb 8, 2017, 12:10pm
Consumption threshold	Reached 150 kWh	Feb 10, 2017, 8:45pm



5,332,740 kWh

consumption so far this year

\$586,601.38

spent so far this year

Waste Diversion Monitoring

Waste Diversion Rate / Sep 1, 2016-Aug 31, 2017



Organics / Sep 1, 2016-Aug 31, 2017



Centralized Recycling

UHN's centralized recycling program encourages building occupants to stop and think about where they are putting their material. Sorting their own waste makes individuals more conscious of their waste habits.

Taking the convenience out of throwing out trash is a good thing and will correct any bad habits that some work colleagues may have.

The End Goal

- Energy Management
- Predictive Maintenance
- Monitoring & Control
- Access & Security
- Asset Lifecycle
- Resident Experience & Health
- Smart Building Automation
- Life Safety Systems
- Device Connectivity & Management
- Data Management & Insights
- Resident Safety
- Advanced Analytics
- Business Productivity & Process Optimization
- Cost & Impact Reduction = Affordable Housing
- Futureproof Systems

QUESTIONS?

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