

# ENERGY BEHAVIOUR IN HEALTHCARE STORIES FROM THE FIELD

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**Webinar**

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# Today's Objective

Explore an example of how hospitals and health care services connect humans and energy efficiency to minimize building complications and reduce energy waste



# STORIES FROM THE FIELD

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Atrium Health | Carolinas | USA

# Atrium Health

Carolinas HealthCare System is  
 **Atrium Health**

- 940 care locations
- 62,000+ staff
- 7500 beds
- 17.5 M ft<sup>2</sup>
- 12.5 M patient encounters/year
- Utilities \$37M
- Sustainability born in 2012



\* stats updated in 2018



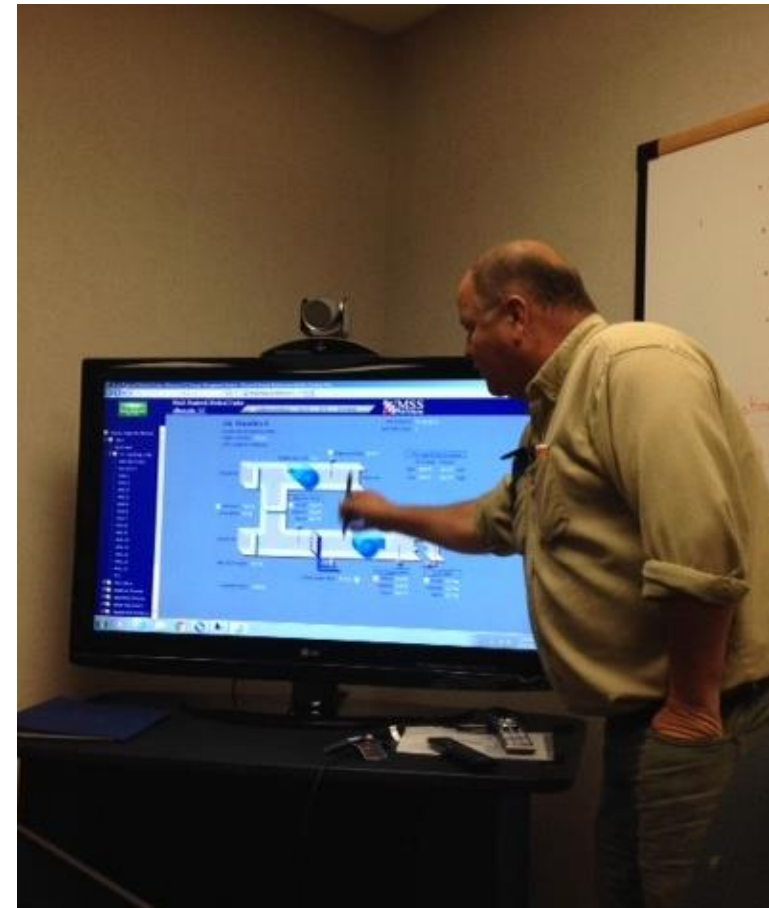
ENERGY  
**CONNECT**

**Energy Connect will help link human actions to energy savings, natural resource conservation and patient experience**

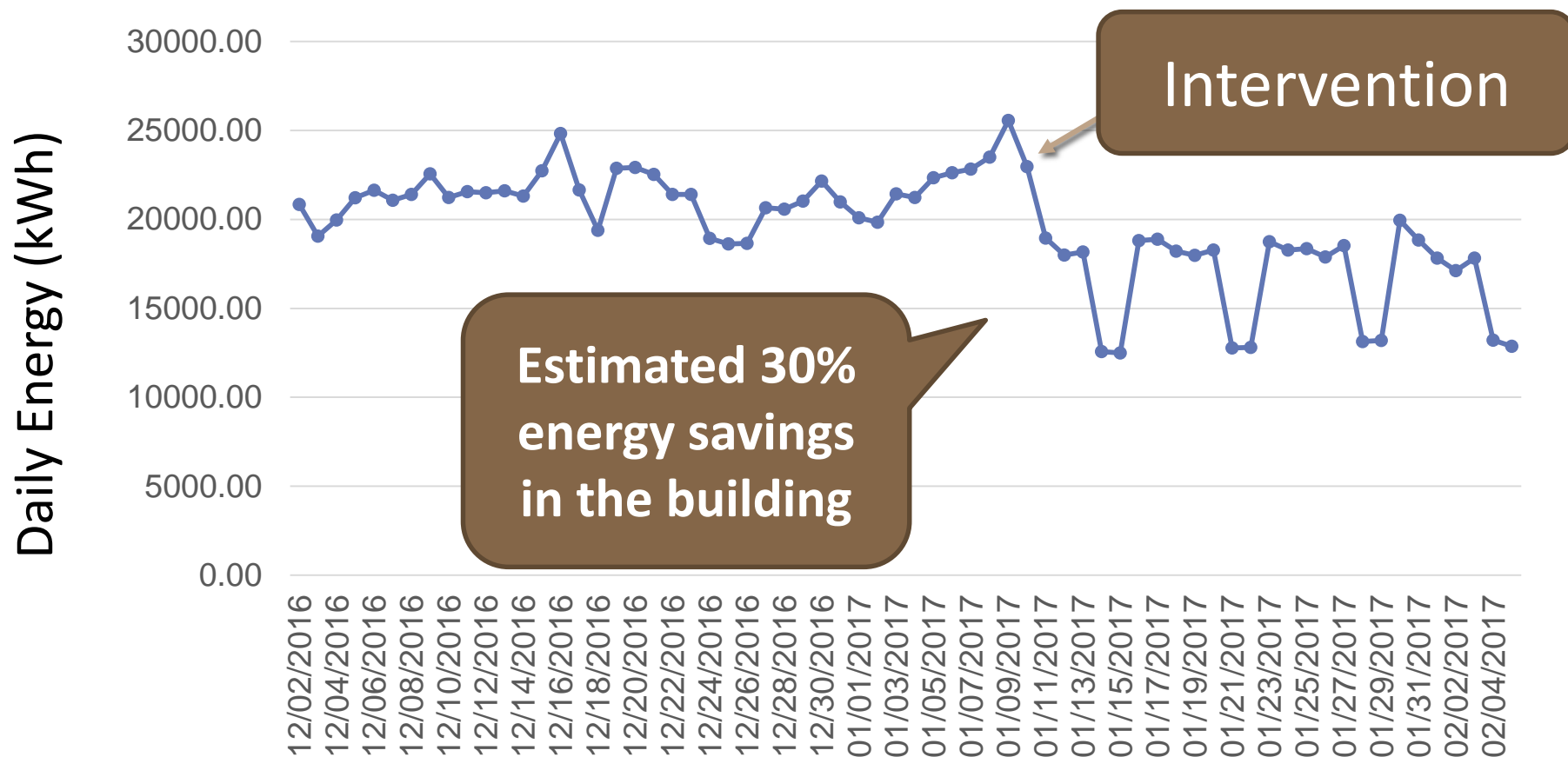
# Energy Connect for Building Mechanics

## First 6 interventions:

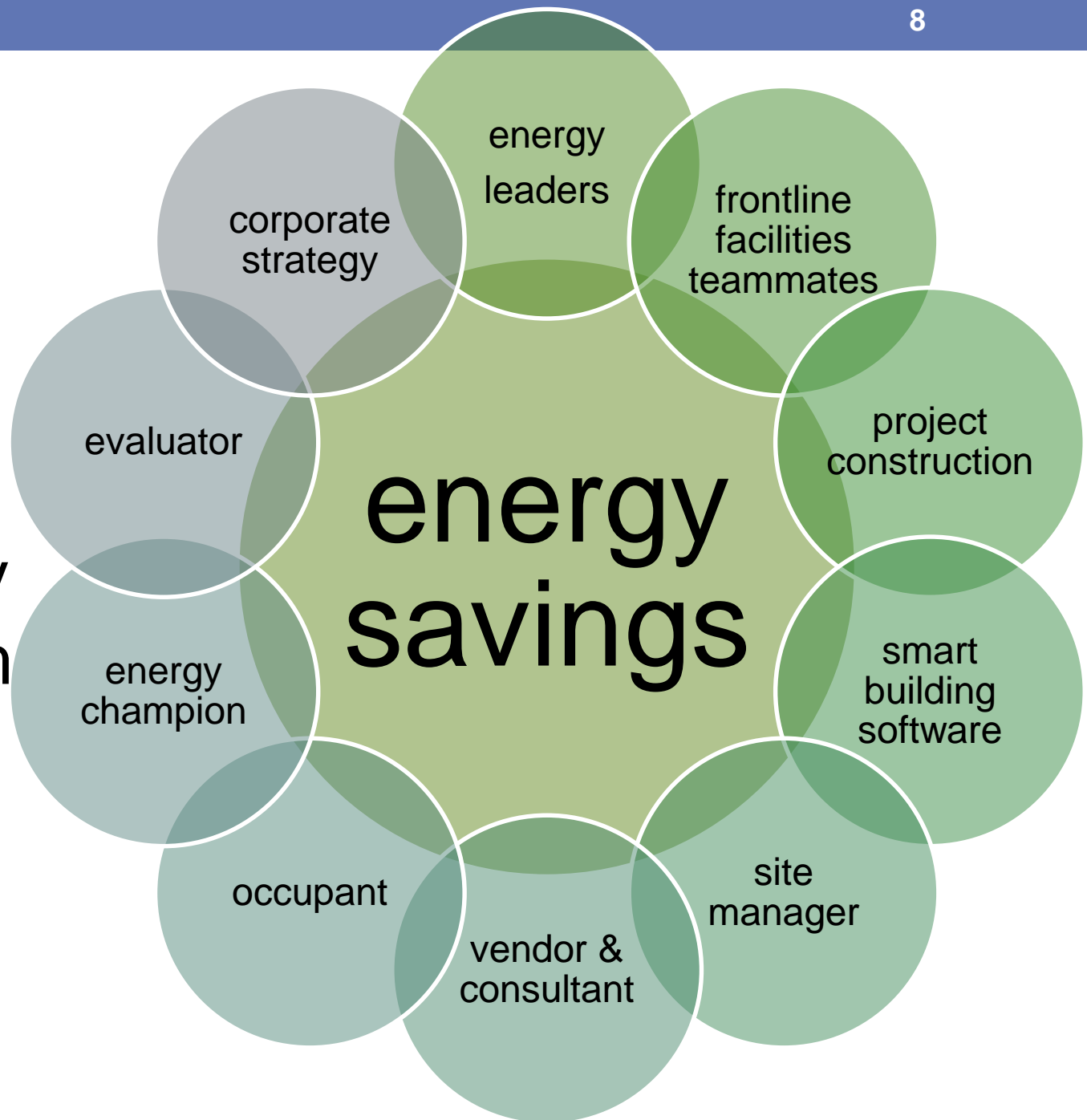
1. Training
2. Make data visible
3. Select and support a site based energy champion
4. Develop a hot/cold call response process flow
5. Document adjustments in the BAS
6. Promote conversation between occupants and facilities with regard to energy savings



# Medical Office Building Example



# Actors in the Energy Ecosystem





# Program Elements

target audience and behaviour

indicator of success

baseline & goal

interventions

barrier

measurement

co-benefits

feedback

# Anecdotes

1. Hiring for energy expertise
2. Solving for multiple outcomes simultaneously (eg. energy efficiency and indoor air quality)
3. Including multiple perspectives in research and decision making (eg. Building operators part of design phase, nurses part of evaluation)
4. Senior leaders setting energy efficiency goals
5. Giving permission to frontline to solve energy efficiency challenges (eg. Documentation of adjustments in building automation system BAS)
6. Creating jobs with 21<sup>st</sup> century problem solving skills

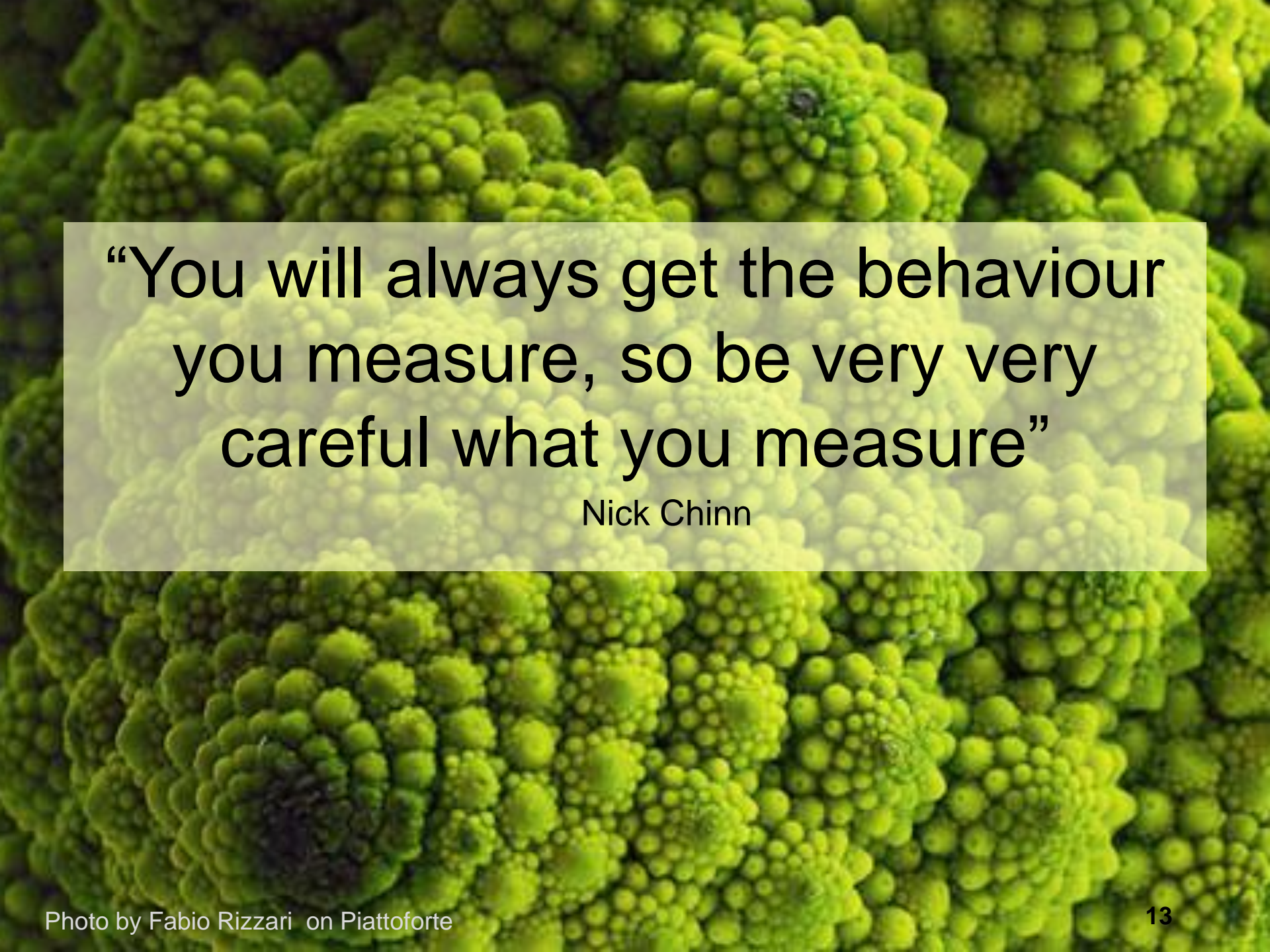
# Energy Model Results 2018

Summary (note that all 6 *Energy Connect* interventions have not yet implemented)

Site	Electricity Savings	Gas Savings	Attribution & Comments
(1) Acute hospital (rural)	5.1%	6.7%	Combined capital projects + <i>Energy Connect</i>
(2) Rural hospital	7.1%	- 7.7%	Combined capital projects + <i>Energy Connect</i> 4 capital projects overlap No explanation found for negative gas savings Reporting period not complete
(3) Medical Office	8.3%	n/a	<i>Energy Connect</i>
(4) Medical Office	1.3%	8.0%	Initially <i>Energy Connect</i> + RCx Electricity savings not statistical
(5) Acute hospital (urban)	4.1%	18.6%	Initially <i>Energy Connect</i> + RCx Natural gas model larger errors Reporting period not complete
(6) Data Center	12.5%	n/a	<i>Energy Connect</i>

# METHOD

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“You will always get the behaviour  
you measure, so be very very  
careful what you measure”

Nick Chinn

# Energy stories bring energy to life

## Everyone has a role to play...

Once upon a time... there was a pediatric building that was always cold during the winter months.

Every day... the peds nurse would set the thermostat to 90F and over all this time, the suite temperature never increased and always stayed freezing.

But, one day... the engineer took a look at the discharge air temperature from the vents and found that the temperature was very cold even though the thermostat was set high. He then checked the attic and found that outside air dampers were left open. He fixed the dampers to operate properly and closed them to the minimum level.

Because of that... the building site began to warm up and make all the nurses and children happy.

Until finally... the engineer and his team now check the dampers every day during the winter.

And ever since then... everyone is warm and happy and **thankful to the smart engineer.**

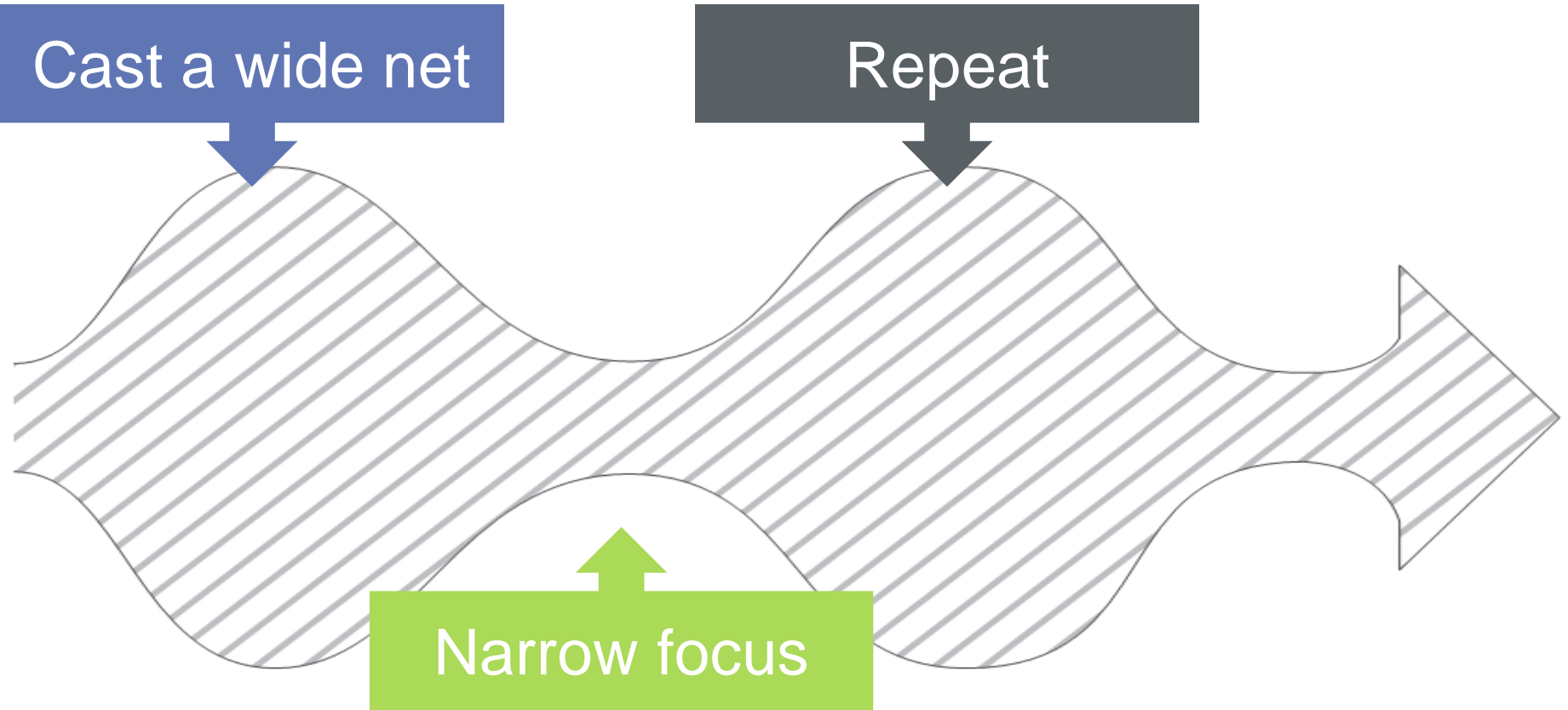
## MOVE FROM IMPRECISE PHASES OF HUNCH TO PROOF

Cast a wide net

Repeat

Narrow focus

Close the gap between values and action with insights



# Measure what is useful not what is easy to collect

- Measuring the impact of behaviour change is different from measuring technical or process changes
  - Quantitative answers; what?
  - Qualitative answers; why? and how?
- Non-energy impacts
- Extend the timelines



# We collected our energy stories

## Surveys and interviews

Surveys of frontline facilities staff (N = 113)

Informal focus groups with *Energy Connect* participants (N = 10)

Interviews with actors at all levels (N = 20)

Results	Example
Universal Circumstances	Most organizations have a hard time with big picture change
Atrium Health-specific Circumstances	Each site is different
Social Circumstances	Lack of social cohesion and hierarchical structure
Individual Circumstances	Staff's maintenance habits are hard to change

# Used themes to document baseline

Theme	Example	Quote
Silos	Hierarchical culture	<i>“building operators are not part of corporate decision making”</i>
Caring about energy	Perception that energy is a low priority or “not part of my job”	<i>“we can only consider first costs and if the payback is more than five years it can’t be done”</i>
Skills and experience	We don’t value the skills required to run the buildings	<i>“we don’t hire technically skilled people to run the complex systems installed”</i>
Time and attention	High tolerance for short term solutions	<i>“we are always putting out fires and juggling grenades”</i>

# Used themes to identify points in the system we could intervene

Theme	Example	Quote
Control	Operators do not have ability to influence practice	<i>"We just say I don't have control over that, which is not conducive to hitting the mark, so to speak."</i>
Thermal comfort	Balance between addressing concerns quickly and being efficient	<i>"Everyone drops what they are doing to address patient comfort, regardless of energy outcomes."</i>
Job and reputation risk	Averse to making changes that might hurt the individual's reputation or job security	<i>"I have done projects that weren't approved, but I knew they had to get done. And I'm willing to deal with the wrath because it just can't get approved quickly enough."</i>

# Outcome

**Each actor in the ecosystem is aware of and can act in their own role to contribute to energy savings**

What to look for:

- Compliments energy management already in progress
- Systemic solutions that are grounded in human needs
- Integrated focus on people, process and technology
- Organizational echo - Engaging full spectrum of stakeholders; executive sponsor to workforce champion
- Establishing a continuous improvement mindset
- Pride in accomplishments
- The spectrum of actions and results becomes visible and indicates a shift to a culture of stewardship

# Impact

**Visibly thriving communities require less external stimulus or management**

**Holistic perspective acknowledges and accounts for variability, unpredictability and interdependence**

What to look for:

- Increased energy savings
- Energy savings retained over the long-term
- Internal capability and offers to collaborate
- Increased creativity and idea generation through learning mindset
- Humans are accounted for early and often in energy decisions
- Reduce building scale complications
- Count behaviour as an asset

# Now What? Start Somewhere

- Focus on persistent energy savings over the long-term
- Ask for input and feedback from operators and occupants
- Focus on the services energy is supposed to provide
- Embrace the energy ecosystem
- At a minimum, human actions can save 3-5% of energy used in buildings
- Attributing energy saving from behaviour ranges from difficult to impossible – but we know they contribute!

# Links to more on this....

[2015 Human Behaviour and Facility Energy Management](#)

[2016 ACEEE Buildings Summer Study](#) *Designing Energy Behavior*

[2017 IEA technical report & IEA webinar](#)

[2017 BECC Conference](#) Helping the Behaviour Changers

[2018 ACEEE Building Summer Study](#) *It's Not My Job*

[2018 BECC Conference](#) *Training Building Operators to be Energy Champions*

[2018 WEEC Presentation and Paper](#)

[2018 Tools of Change international landmark case study](#)

[2018 AEE energy innovator of the year award](#)

[2019 EVO \(Efficiency Valuation Organization\) M&V Magazine](#)

Perspective on M&V behavioral change programs in commercial and industrial facilities

# THANK YOU

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