

2016 non-residential lighting market characterization

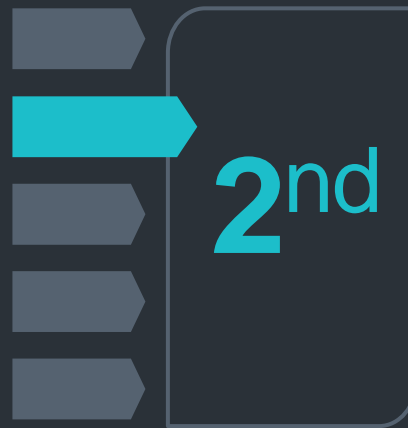
October 18, 2017



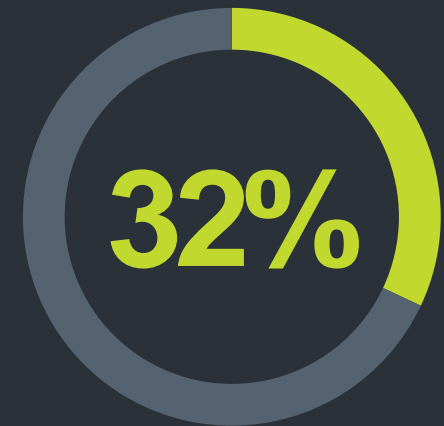
non-residential lighting is...



of non-residential sector
consumption



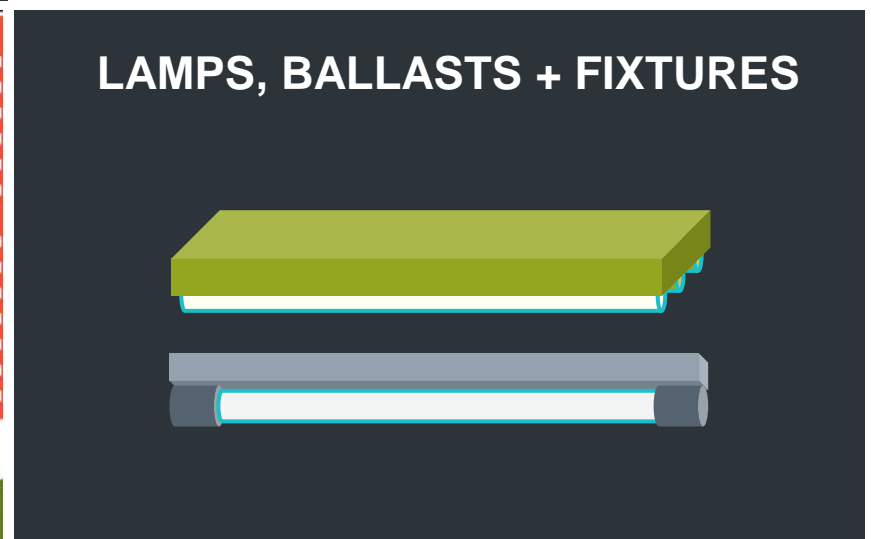
largest commercial
end-use



of energy efficiency
portfolio savings



a complex market

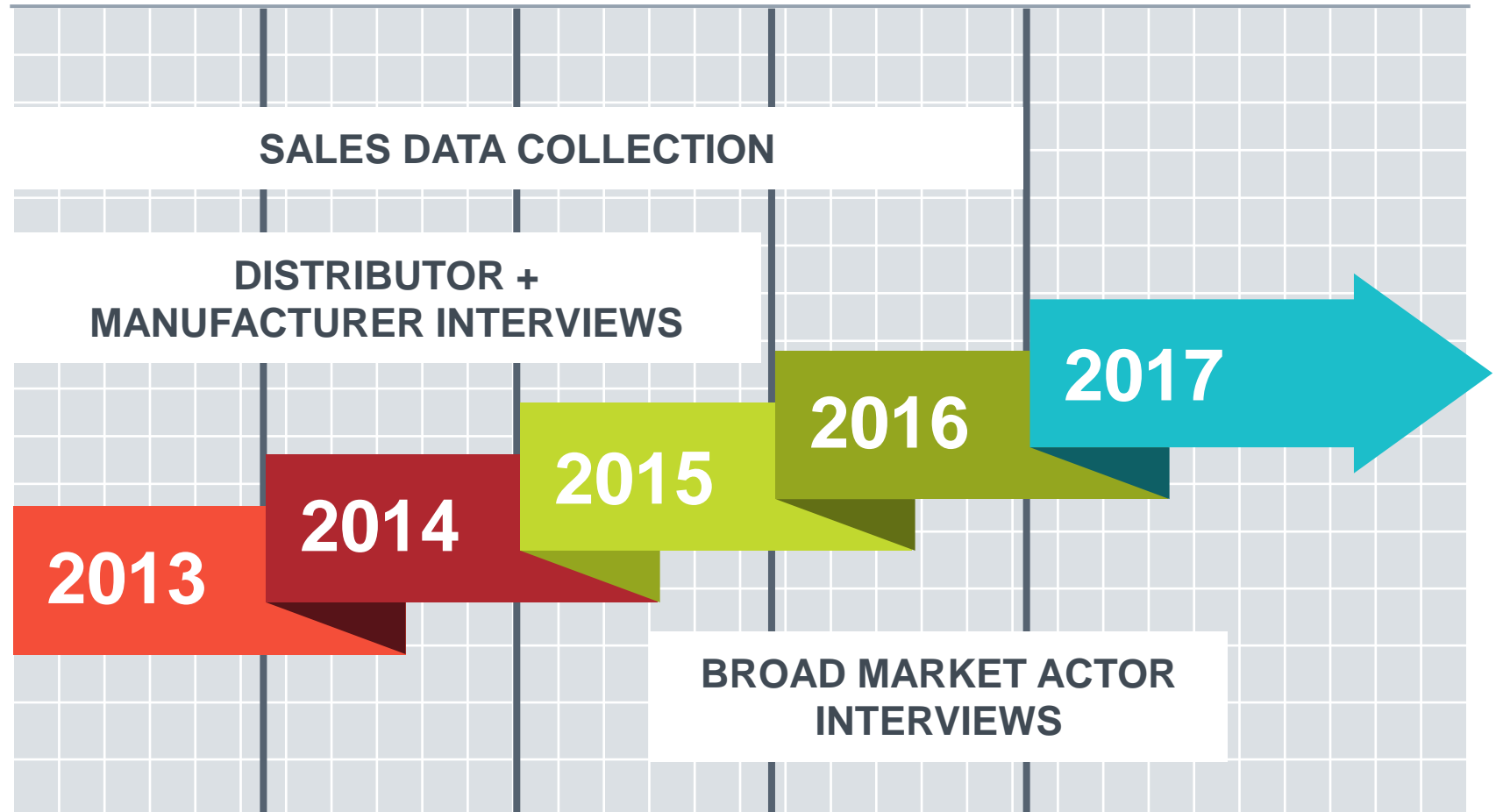




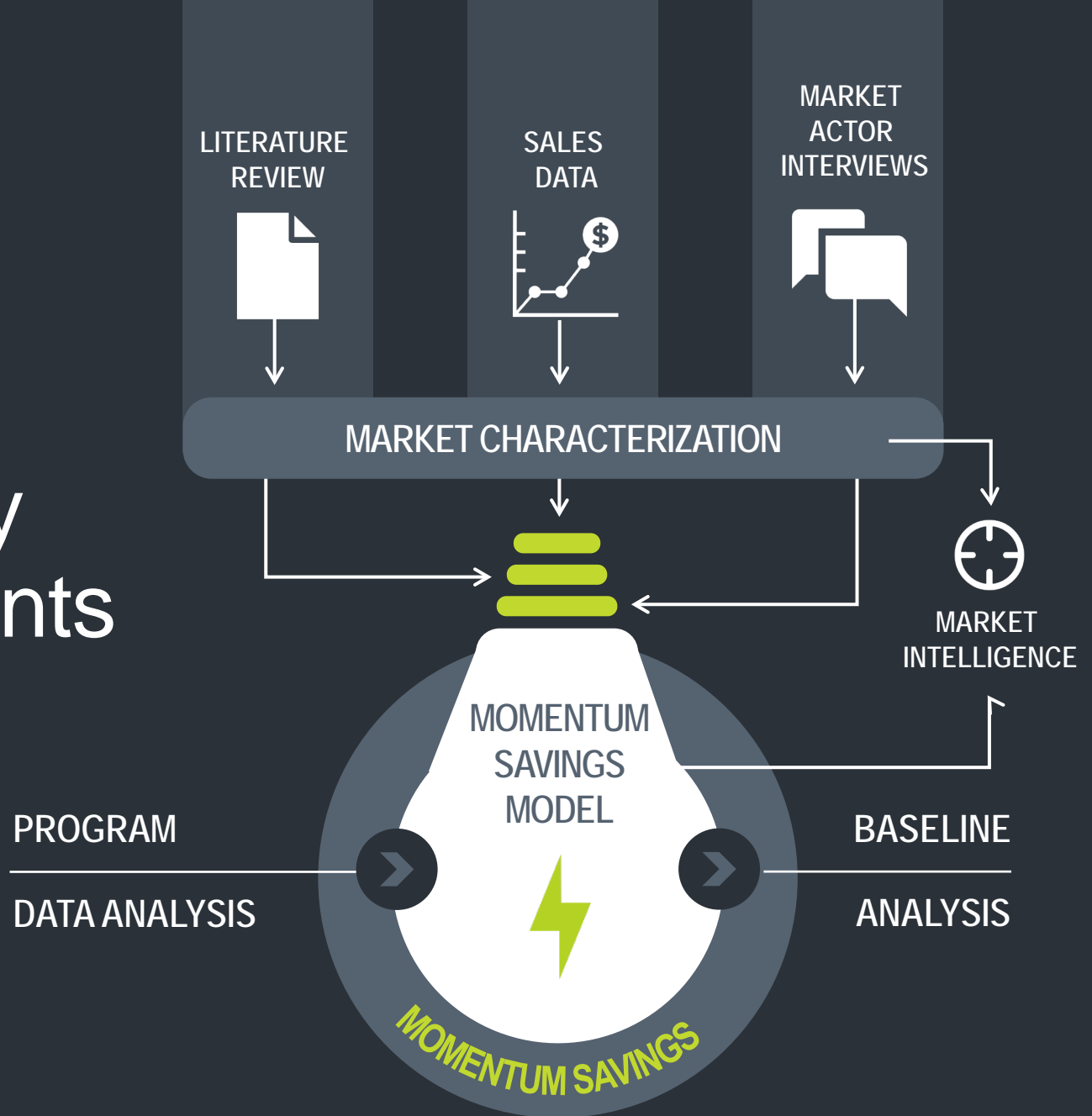
multiple overlapping
TRENDS



BPA is keeping a finger on the pulse



2016
research
had many
components





sales data collection and analysis



DATABASE COMPILED SALES FROM 2010-2015

DETAIL ON ALL TECHNOLOGIES, PLUS CONTROLS

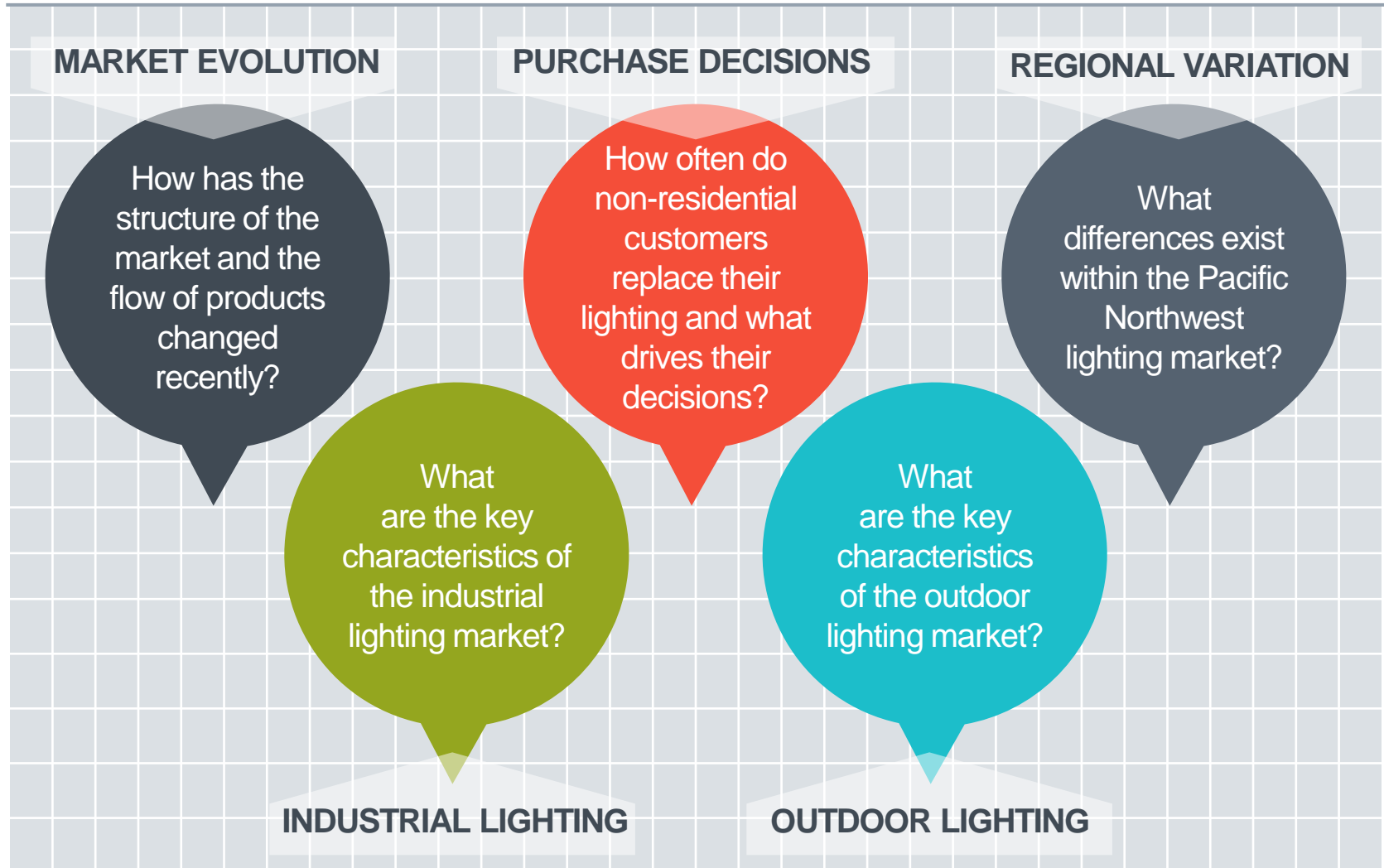
REPRESENTS AN ESTIMATED 35% OF THE MARKET

DATA FROM 29 DISTRIBUTORS

market actor interviews



interview research questions



literature review

Identified data
collection
opportunities

Over 40 regional
and national
data sources

Supplemented model
development where
primary data was
unavailable



regional model development



**New, More Robust
Non-residential
Lighting Model**



**Stock Turnover
Approach With
More Granularity**



**Forecasting
Capability**

model scope



Every Lamp Sold



Every Fixture
in the Stock



All Three Sectors

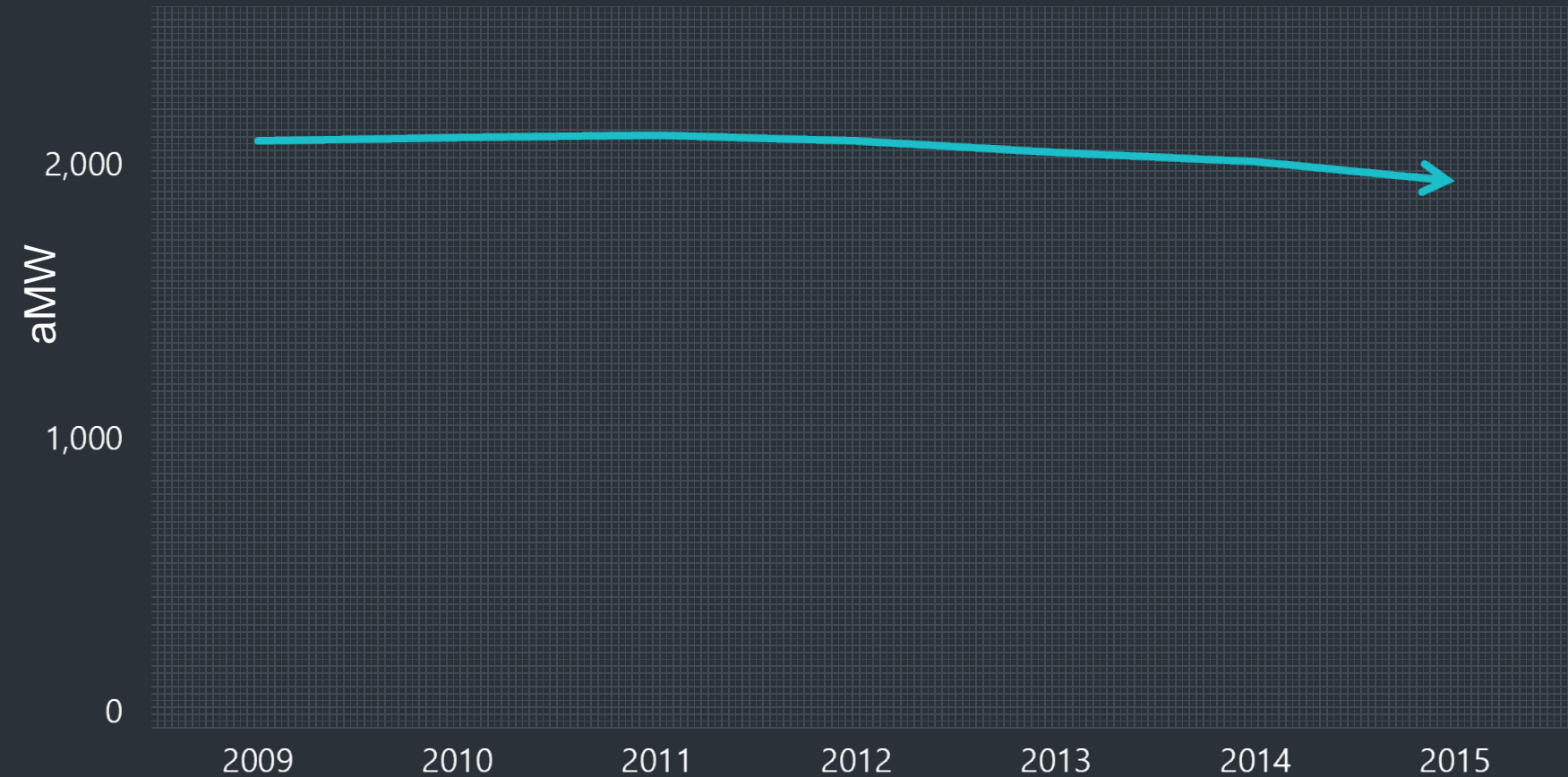


what we learned



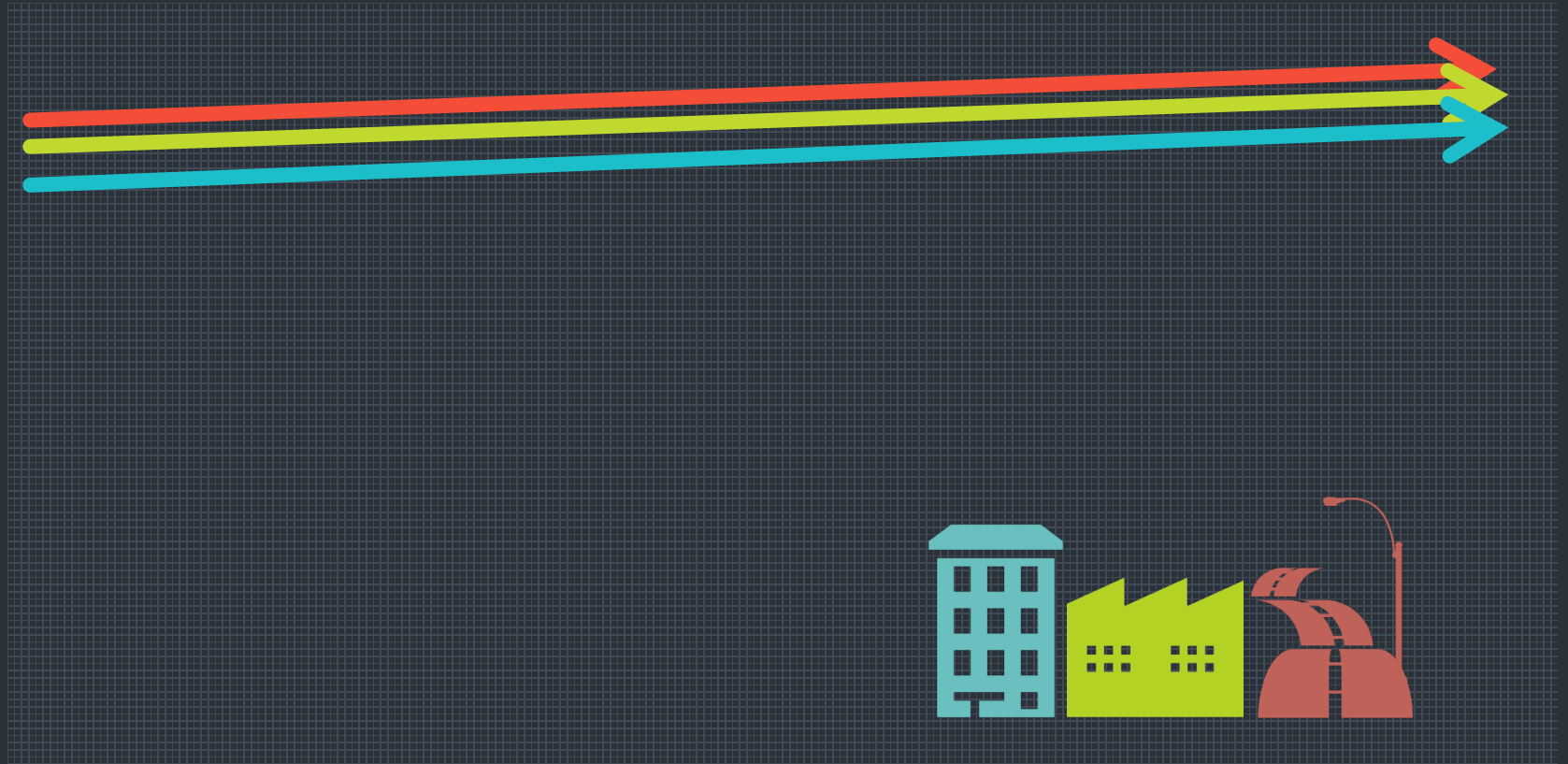


regional consumption declined 7% between 2009 and 2015





new construction on the rise





three trends driving consumption down

1

BETTER LINEAR FLUORESCENTS

2

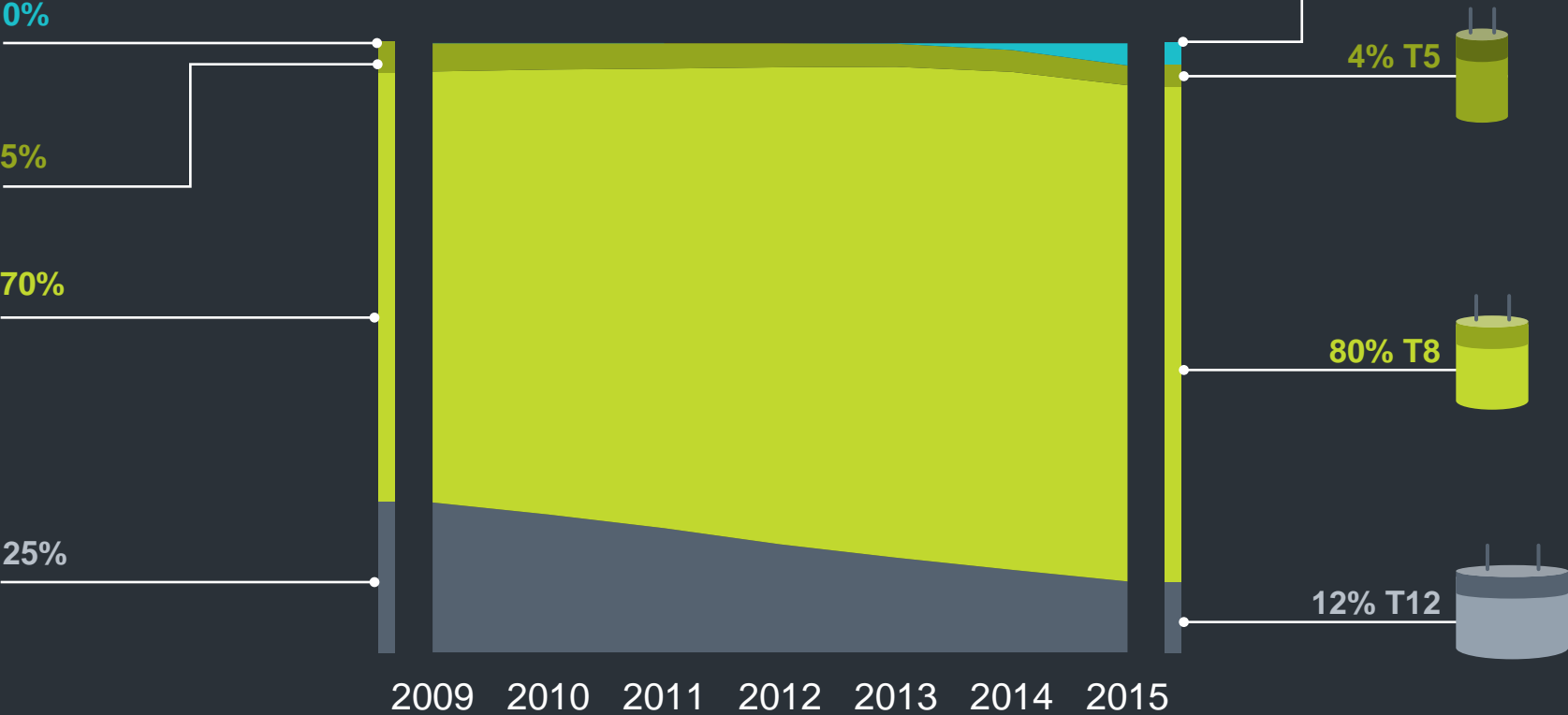
LESS HID

3

MORE LED

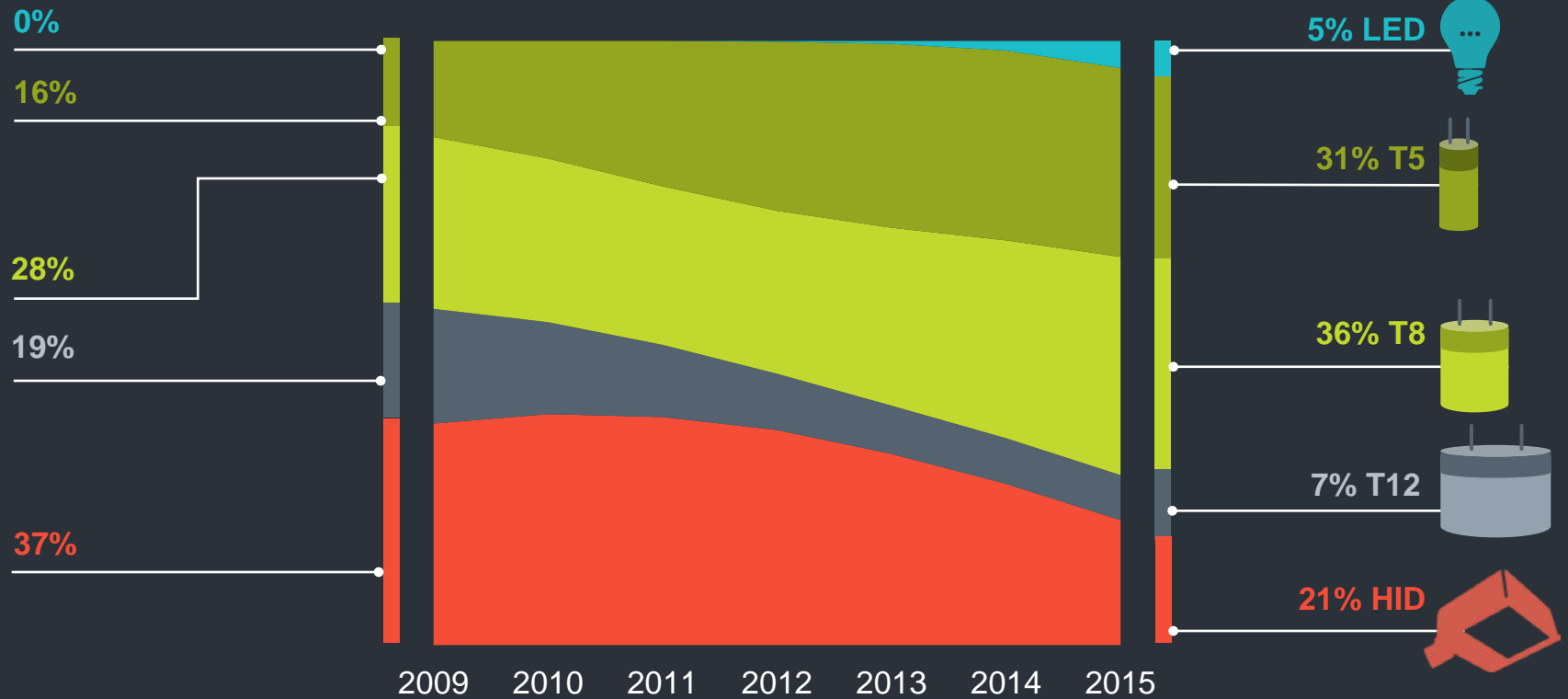
better linear fluorescents

Ambient Linear Application Installed Fixtures



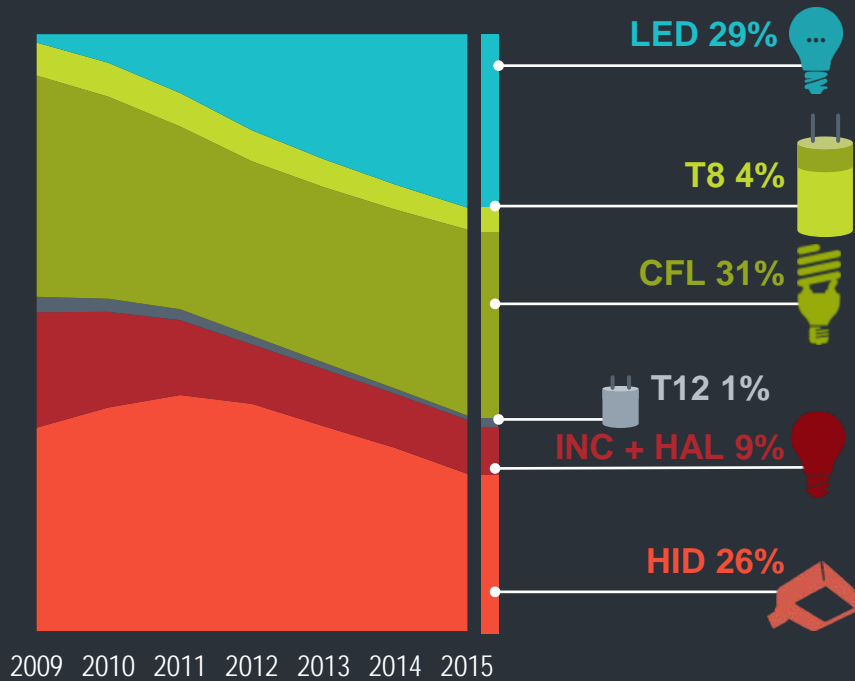
less HID

High/Low Bay Application Installed Fixtures

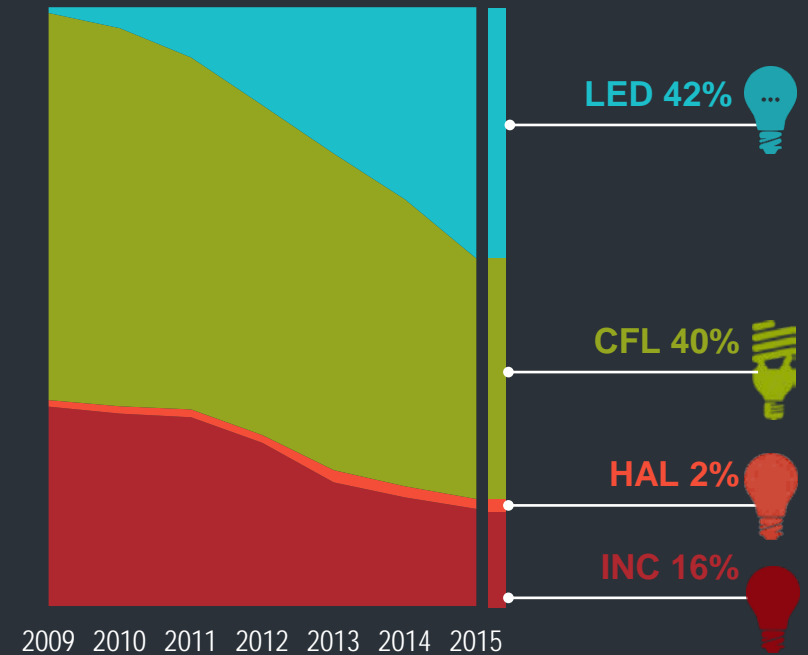


more LED

Building Exterior Installed Fixtures



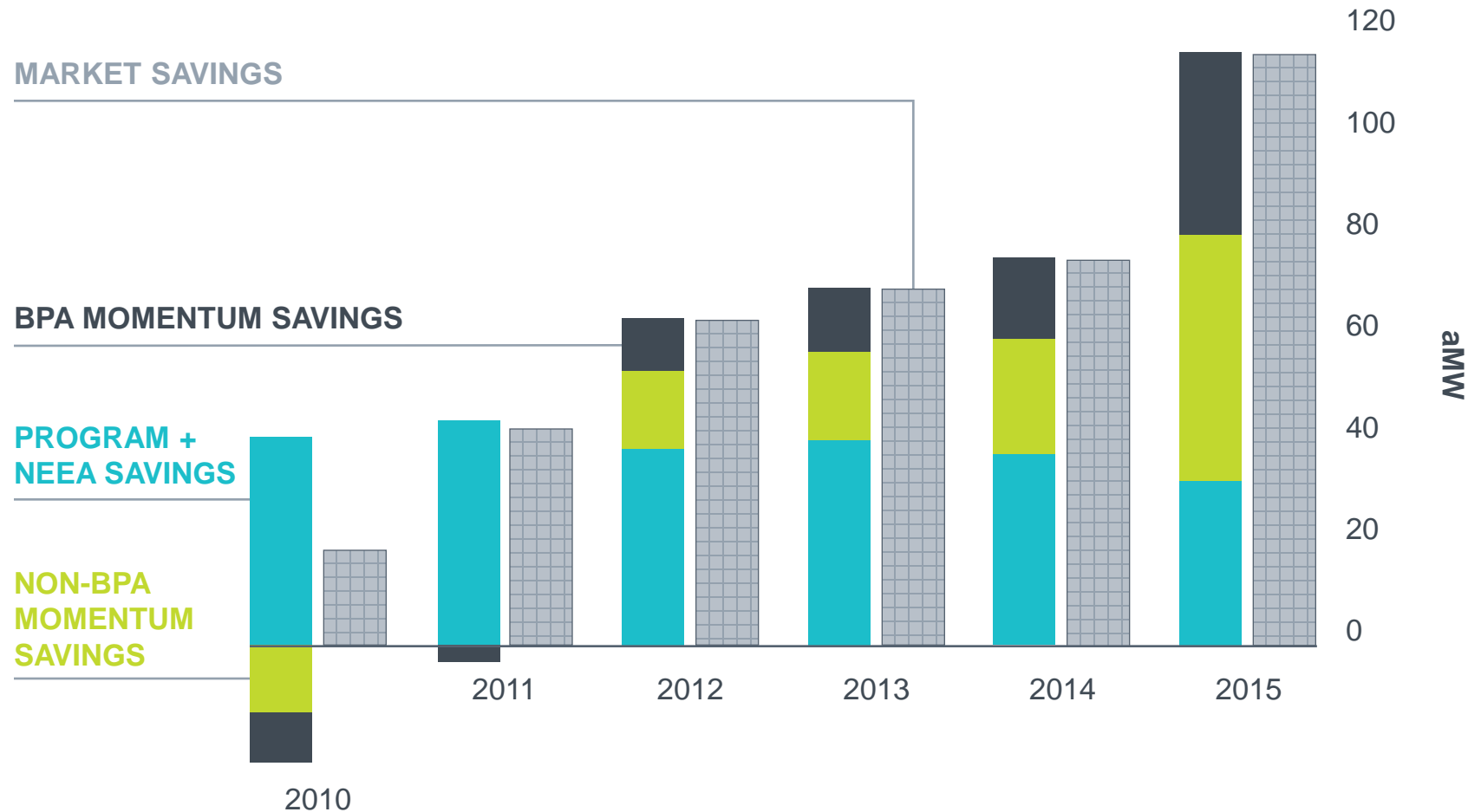
General Purpose Installed Fixtures





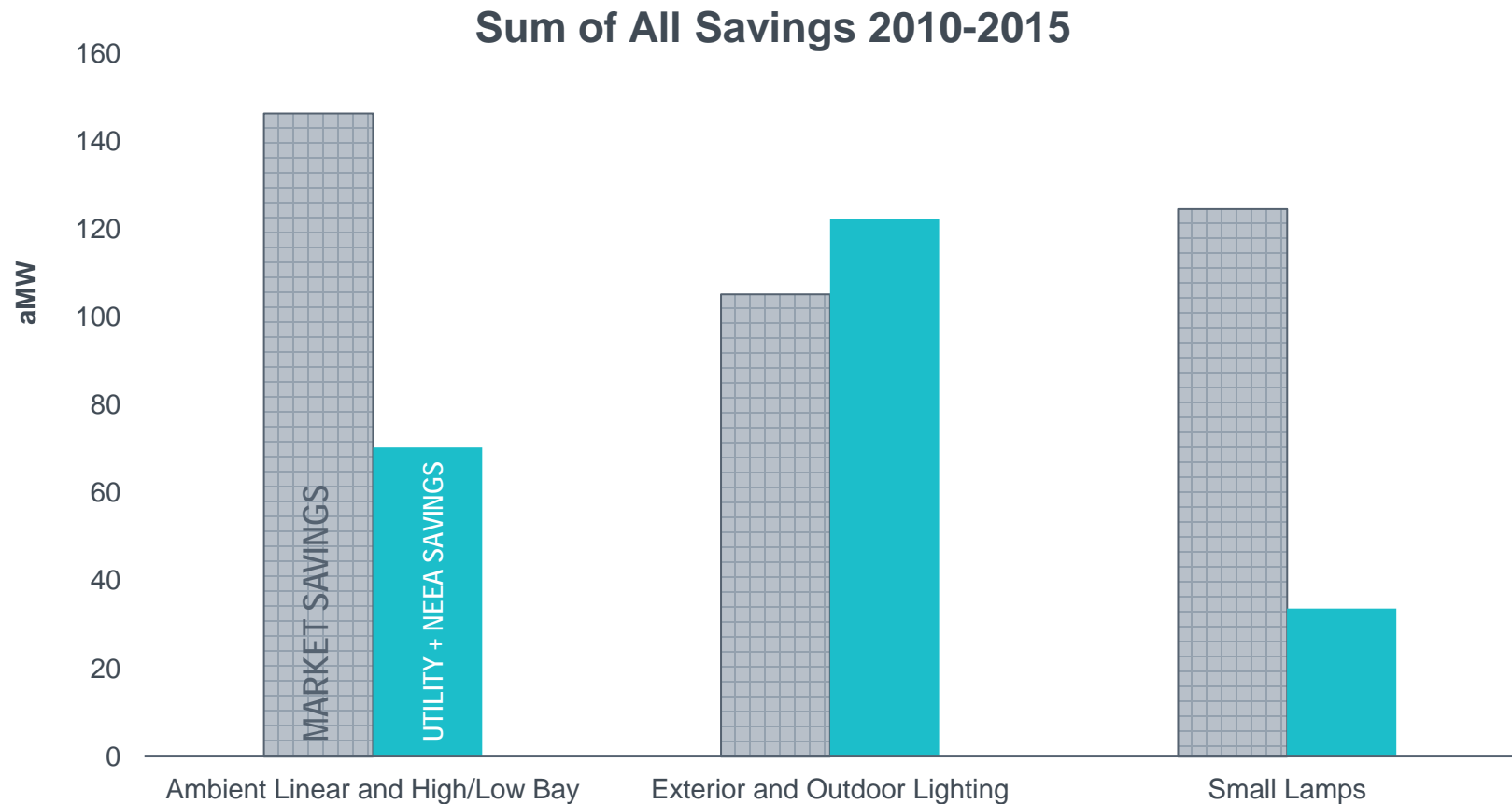
What do these trends mean for market and momentum savings?

377 aMW of market savings





programs focused on ambient linear, high/low bay, and outdoor



the market dynamics driving savings





LEDs poised to become technology of choice

Only a minority of sales are LED...

but market actors expect this to change

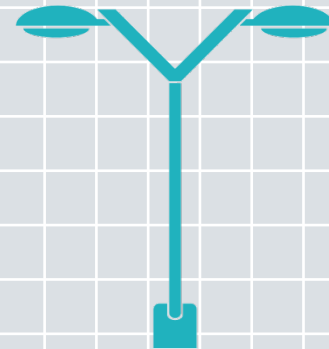




LEDs have become the norm in some applications



**Save Municipalities +
Utilities Energy +
Maintenance Costs**



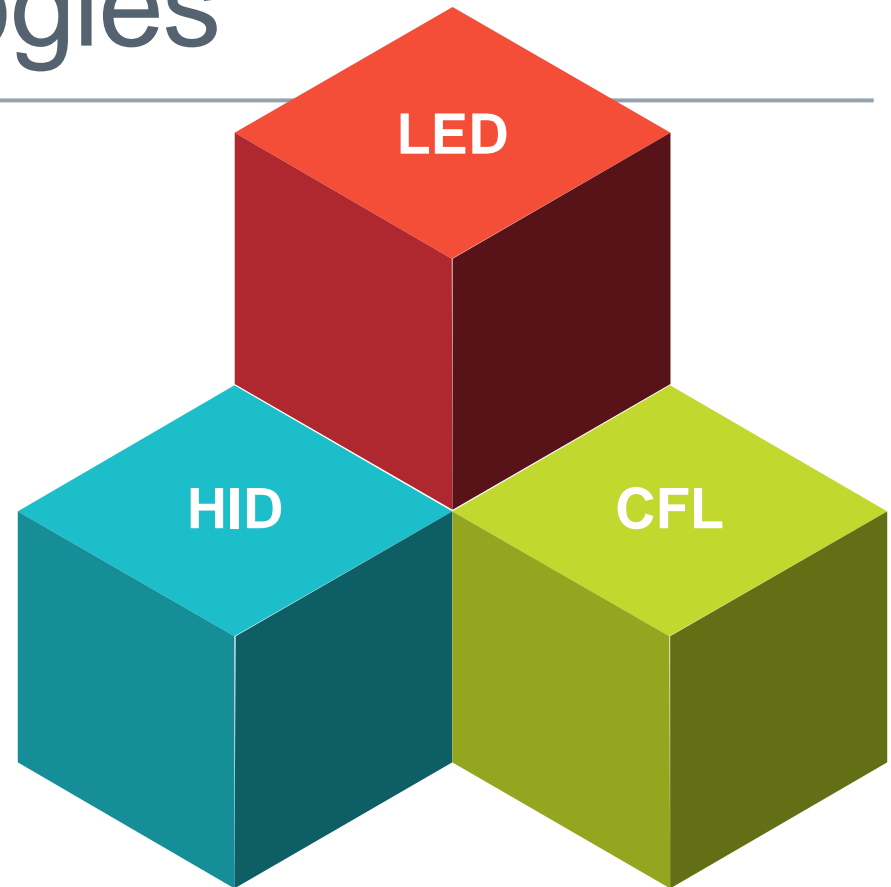
**Majority of Street
Fixtures Sold in 2015
were LED**



some manufacturers are prioritizing LED over other legacy technologies

R&D spending focused on developing LED products

Some manufacturers reducing production of legacy technologies like HID

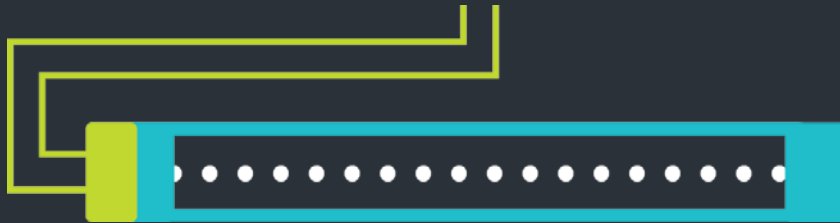




manufacturers are making more LED options available for commercial customers



★
GOOD
TLEDs




★★★
BETTER
Retrofit Kit



★★★
BEST
LED Luminaire +
Wireless Controls



LEDs available in niche applications



niche lighting
applications

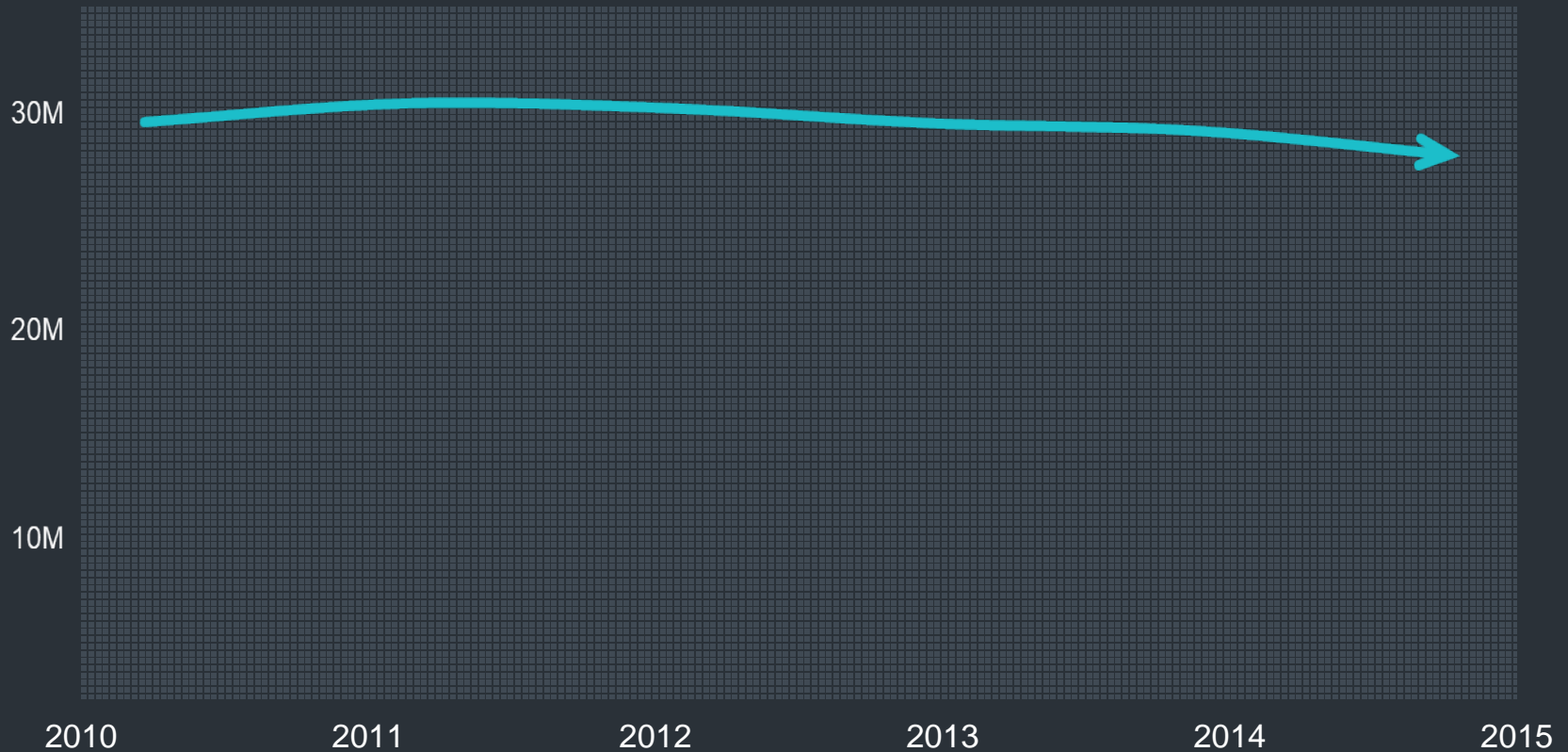


Waterproof Fixtures



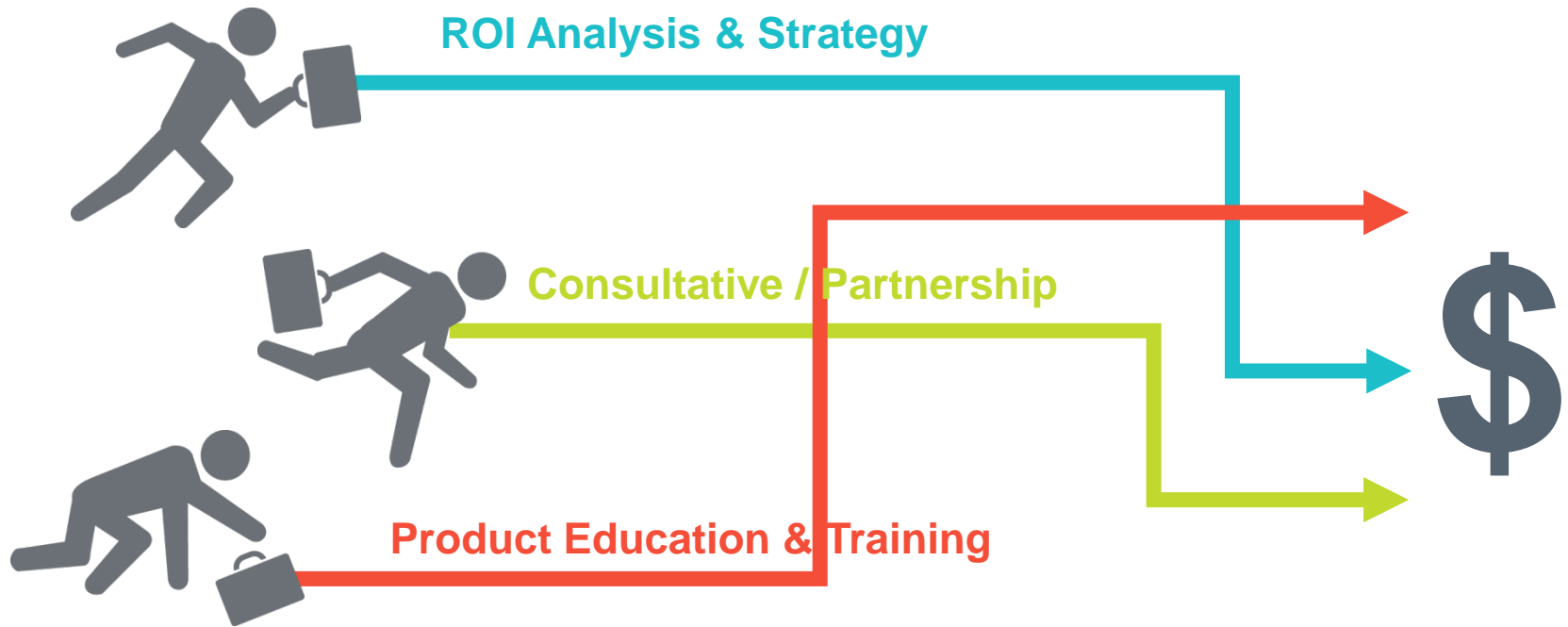
Shatter-Resistant Lamps + Fixtures

market actors concerned about declining sales





market actors are adapting to changing times





Rest of market is poised for more change in the coming years

Manufacturers are embracing LED

takeaways

Small lamp applications saw the sharpest decline in consumption

Sales volumes starting to decline



how can we continue improving the model in the future?

1

Outdoor and Exterior
Lighting Research

2

Ongoing Sales Data Collection

3

Turnover Rate Assumptions

4

LED Characteristics



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