

Market Average Baselines

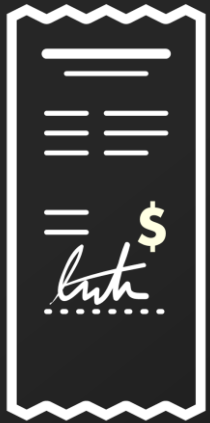
Rob Carmichael, Cadeo Group

22 March 2016



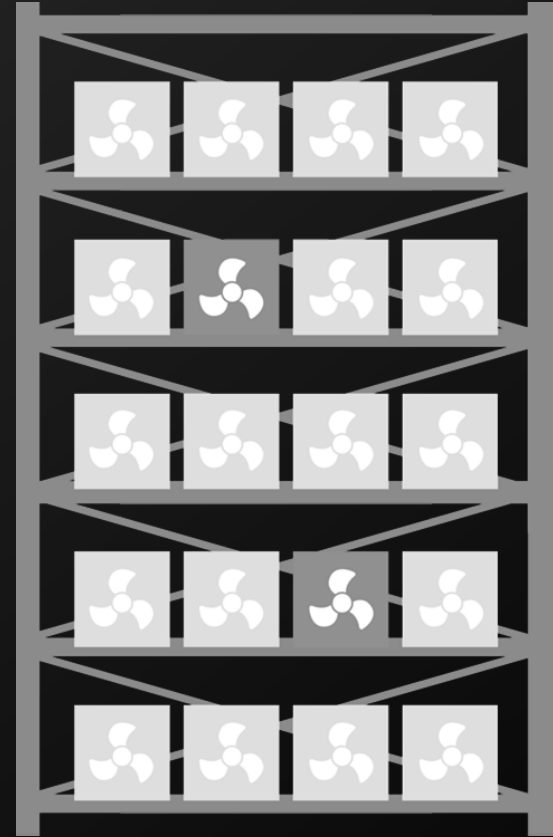
What do we mean by MARKET BASELINE?





It means the
market average efficiency
of **SALES**

Why **SALES**,
not **STOCK**?



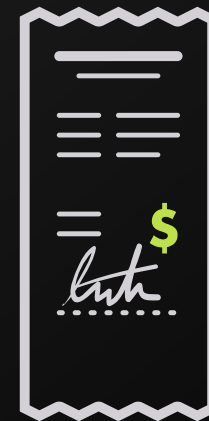
INSTALLED STOCK

• REFLECTS PAST DECISIONS •




PRODUCT FLOW

• TELLS TODAY'S STORY •



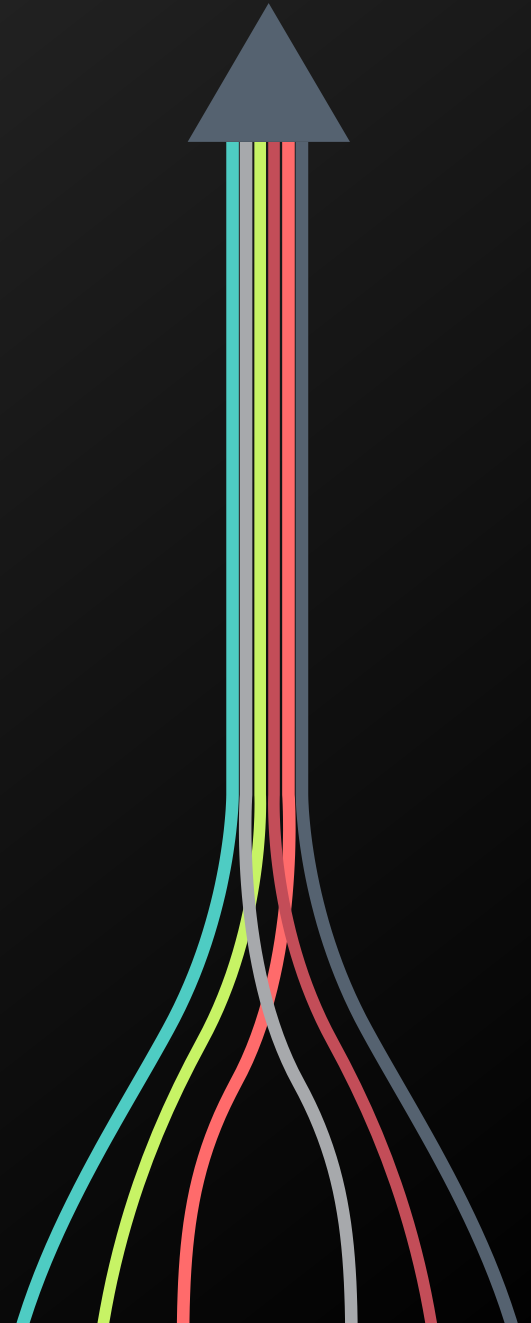


Why are
MARKET
BASELINES
so important?



In the NW load forecast,
planners assume
stock turns over with the
**MARKET AVERAGE
EFFICIENCY**

To *save energy*,
people must do
something *more efficient*
than they would have
otherwise, on average



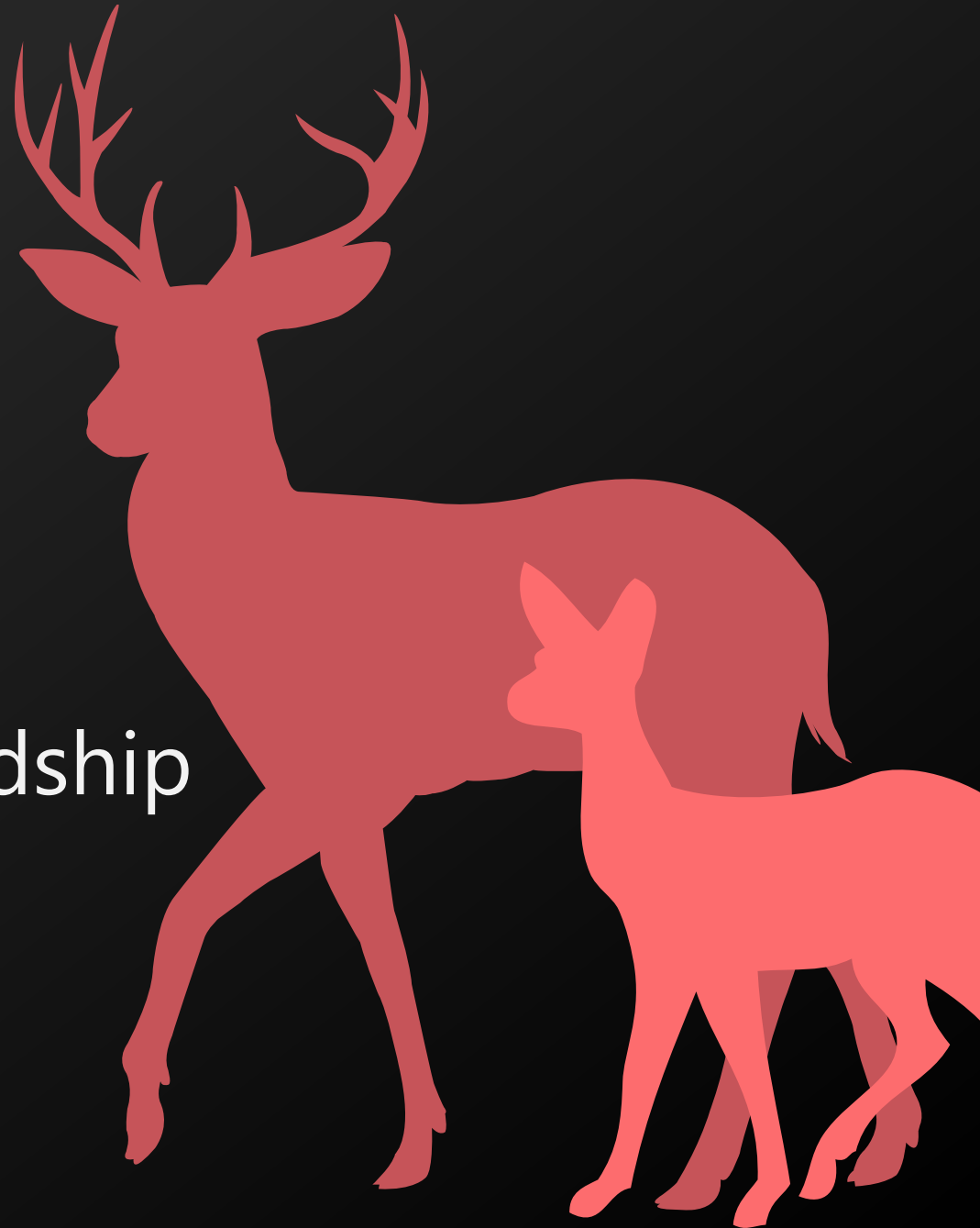
Unlike the stock, the *sales* market average actually represents what consumers would do otherwise, on average.





...particularly with upstream and midstream incentives when we have no clue where the product is installed.

We also want
responsible stewardship
of ratepayer funds,
right?





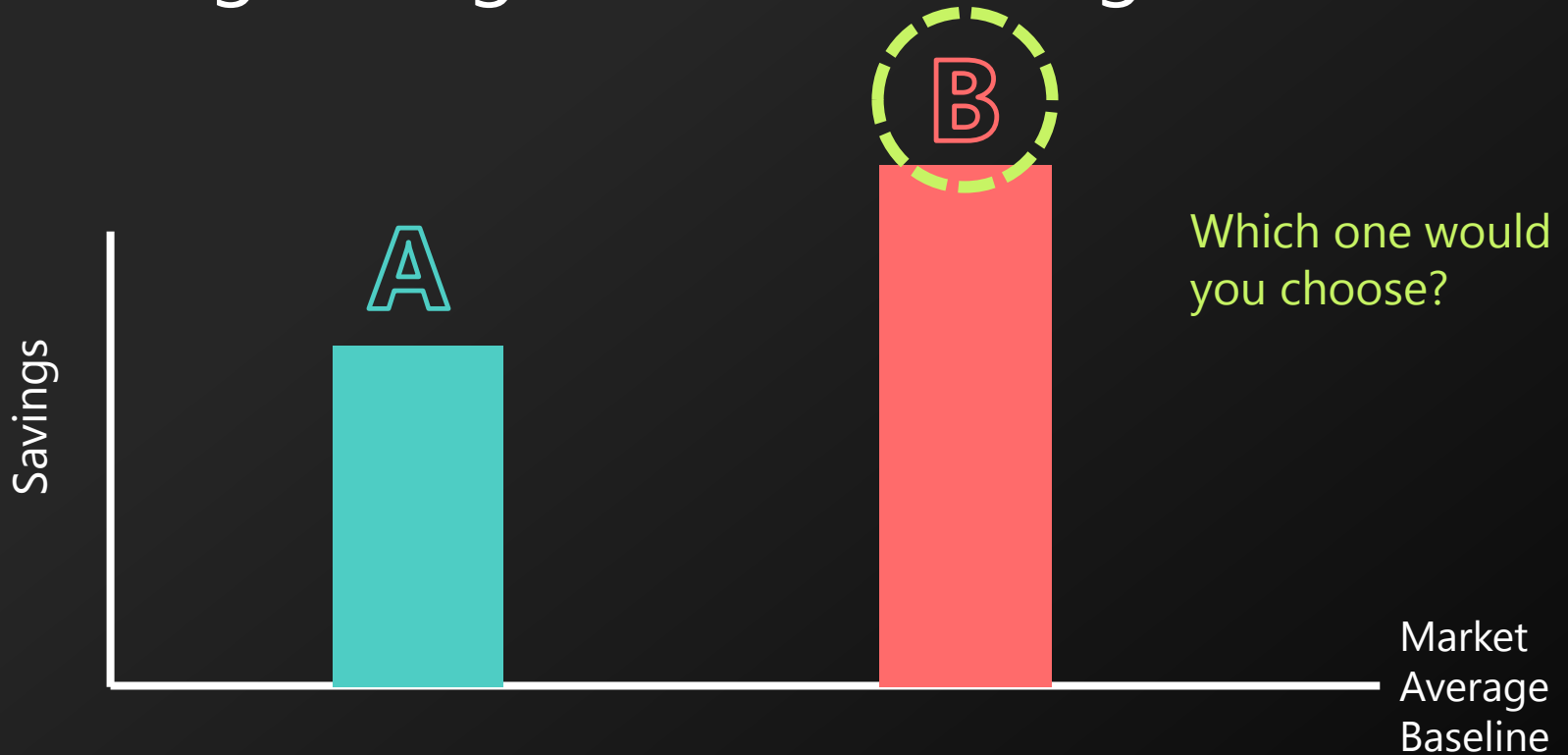
Market baselines ensure
resources are spent on their
best use by acting as an
effective **PRICE SIGNAL**



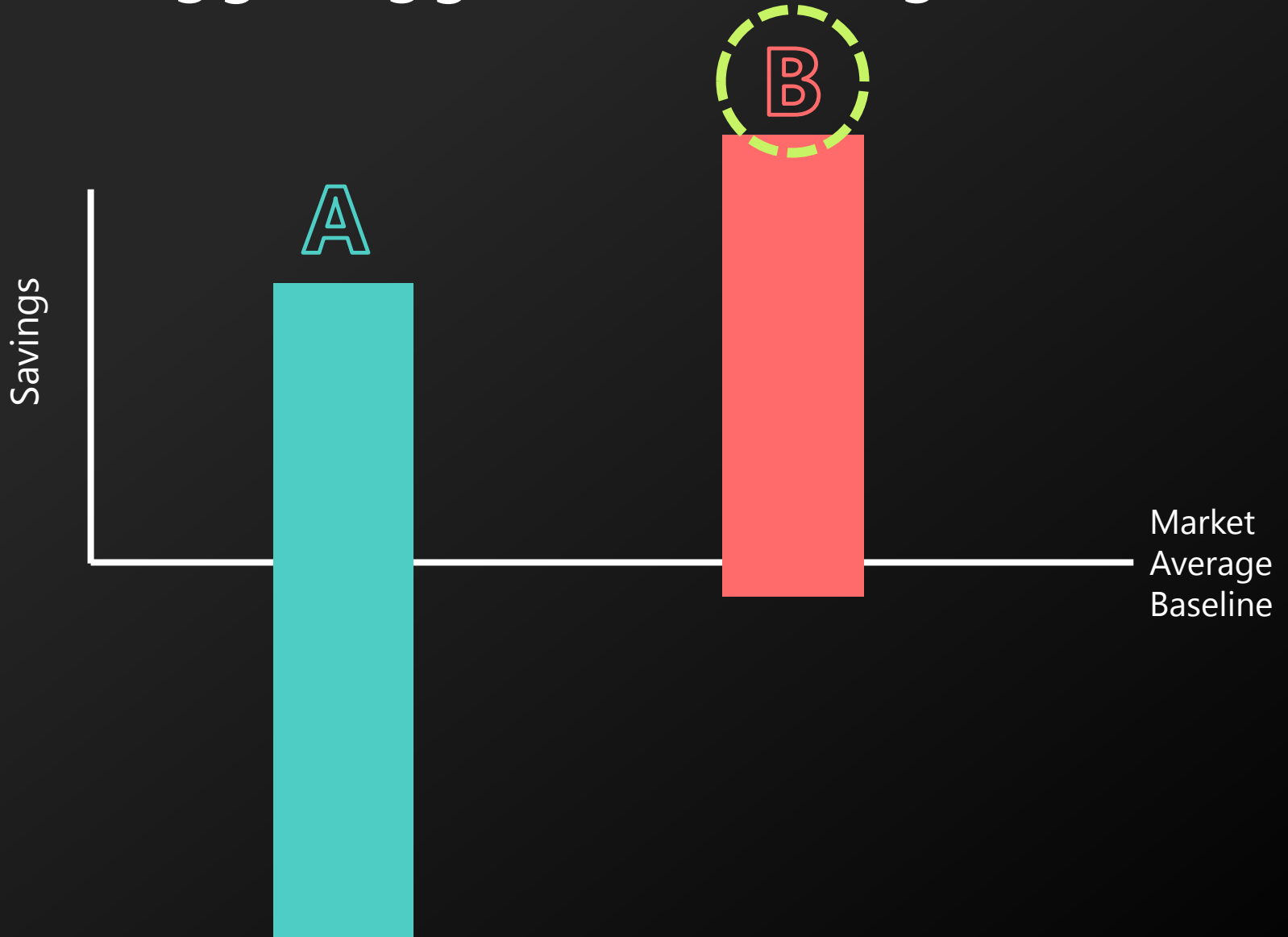
Consider **UBER's**
surge pricing policy

Now consider
you are a program planner
deciding which measures
to **TARGET** & **INVEST** in

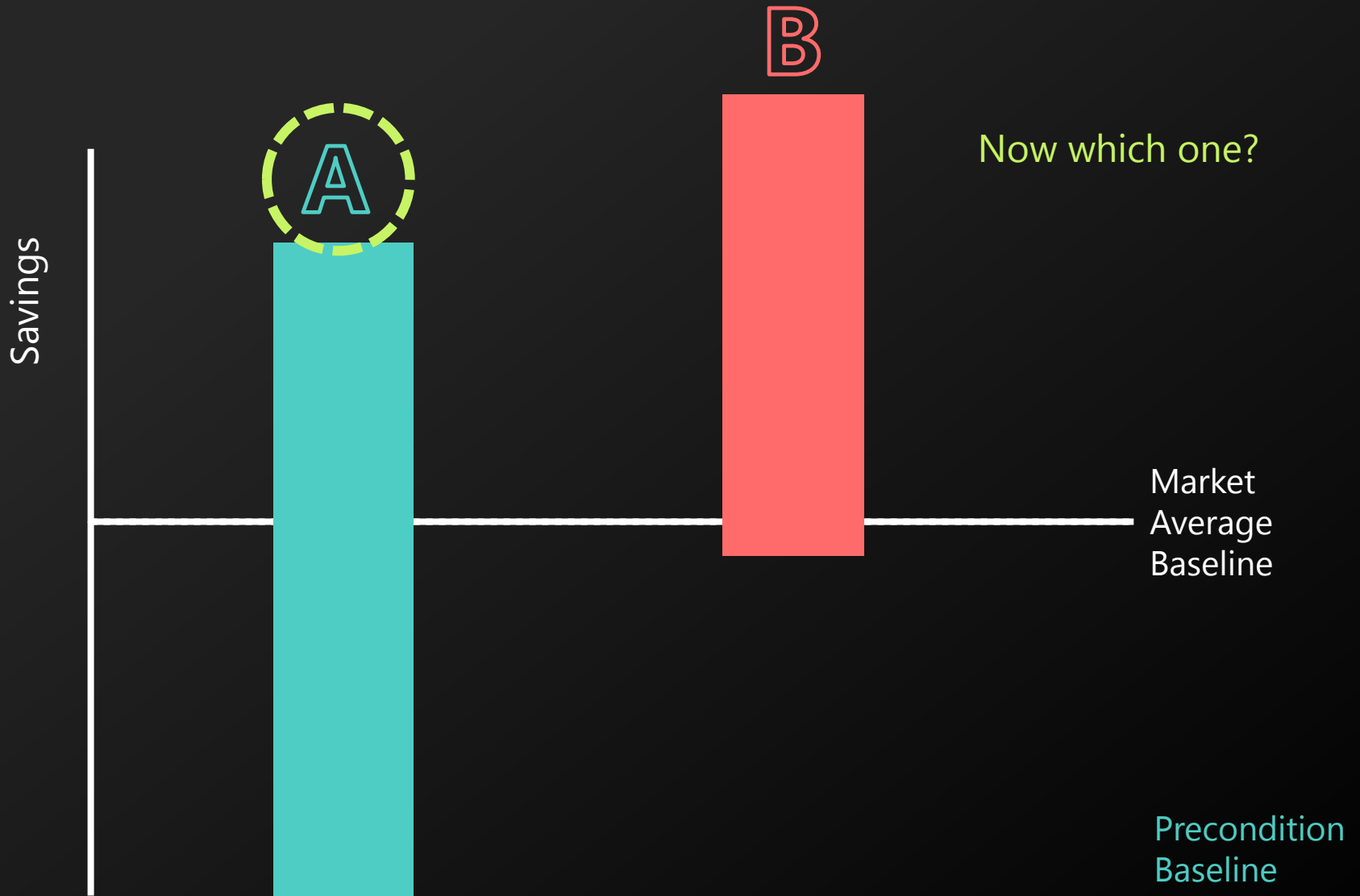
Savings using a Market Average Baseline



Savings using a Market Advertising Baseline



Savings using a Precondition Baseline



Most of the country
uses a **NET TO**
GROSS adjustment
to remedy this issue.



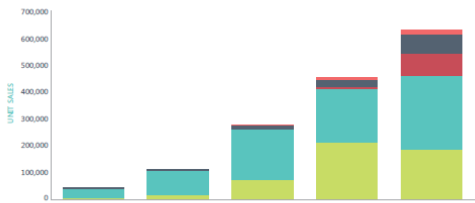
This practice is in part built on the fundamental assumption that we don't have sales data and can't get it.

BPA has rejected that assumption.

LED LAMPS

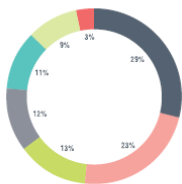
LED lamp technology has progressed quickly since 2010. Costs have come down, reliability has increased, and as a result, sales of LEDs in the Northwest region have grown steadily. The number of total reported LED sales more than doubled between 2012 and 2014 with growth in all LED technology categories.

REPORTED LED SHIPMENTS, 2010-2014



Source: Navigant and Cadex analysis of distributor sales data

PERCENT OF REPORTED LED SHIPMENTS BY PRODUCT TYPE, 2014



The LED market is changing quickly, and so are the LED products that comprise its sales. From 2010-2012, reflectors, downlights, and A-type lamps constituted the majority of reported sales in 2014. LED fixtures and linear replacement TLEDs captured increased market share in 2014 relative to screw-in LED technologies such as A-type and reflector lamps.



Source: Navigant and Cadex analysis of distributor sales data

LINEAR FLUORESCENT LAMPS AND TLEDs

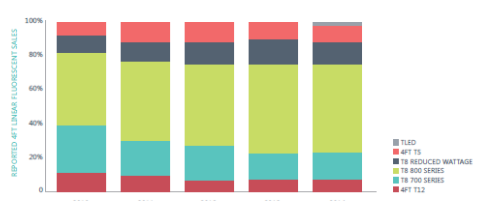
LFLs have been the dominant commercial lighting technology across all five years of the Northwest lighting study. However, data over this five-year span shows decreasing unit sales of LFLs with low efficacies (i.e., how well the lamp produces visible light), such as 700 series T8s and four-foot T12s. A combination of 800 series 32 watt T8s and reduced wattage T8s and T5 lamps, absorbed this changing market share leading to an overall increase in average efficacy across the Northwest. 32W T8 and T12 lamps still represent almost 90% of the market, meaning a shift to reduced wattage lamps (25W and 28W) still offers significant energy savings potential and a market opportunity for distributors.

The new technology on the block was TLED. Although still extremely small compared to the fluorescent market, they have established a presence in the linear market. For purposes of this report, TLEDs consist of all linear LEDs used to replace LFLs. These include three main categories:

1. Direct Lamp Replacement: "Plug and play" lamps which use the existing fluorescent ballast and converts current using internal circuitry
2. Driver/Ballast Swap: Replacement of fluorescent lamp and ballast with LED lamp and driver
3. Ballast Bypass: Existing fluorescent ballast is bypassed but not removed

The direct lamp replacement is presumably the easiest of the replacement options, because it requires only the removal of the existing fluorescent tube. Although some distributors mentioned concerns with selling TLEDs that run off the existing ballast. Due to internal circuitry, the direct lamp replacement has an inherently lower efficacy than the other TLED categories, but still has the shortest payback due to its low installation cost.

LINEAR LAMP UNIT SALES, BY TYPE 2013 - 2014



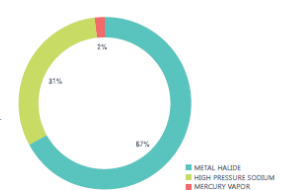
Source: Navigant and Cadex analysis of distributor sales data

HIGH INTENSITY DISCHARGE LAMPS

Metal halide sales remain the top choice in the HID market with an estimated average market share of 67 percent of all HID sales in 2014. High pressure sodium lamps grew from an estimated average market share of 23 percent of HID sales in 2012 to 21 percent in 2014. Mercury vapor lamps, banned by the federal government in 2009, continue to have an estimated average market share of two percent of HID sales.

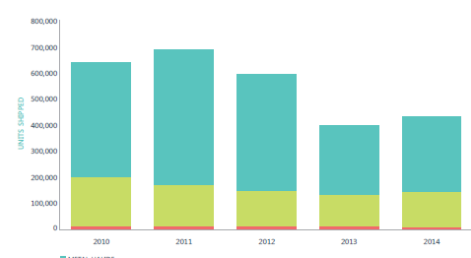
Distributors reported HID lamp shipments in the Northwest region dropped from an estimated 650,000 units in 2012 to 430,000 units in 2014. This also represents a decline in HID share relative to other technologies. Some of the decrease could be accounted for by distributors switching to LED fixtures in recent years.

HID SALES BY TYPE, 2014

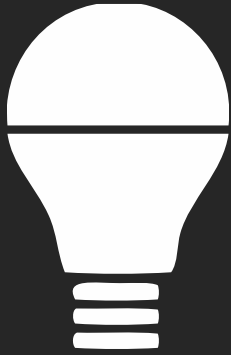


Source: Navigant and Cadex analysis of distributor sales data

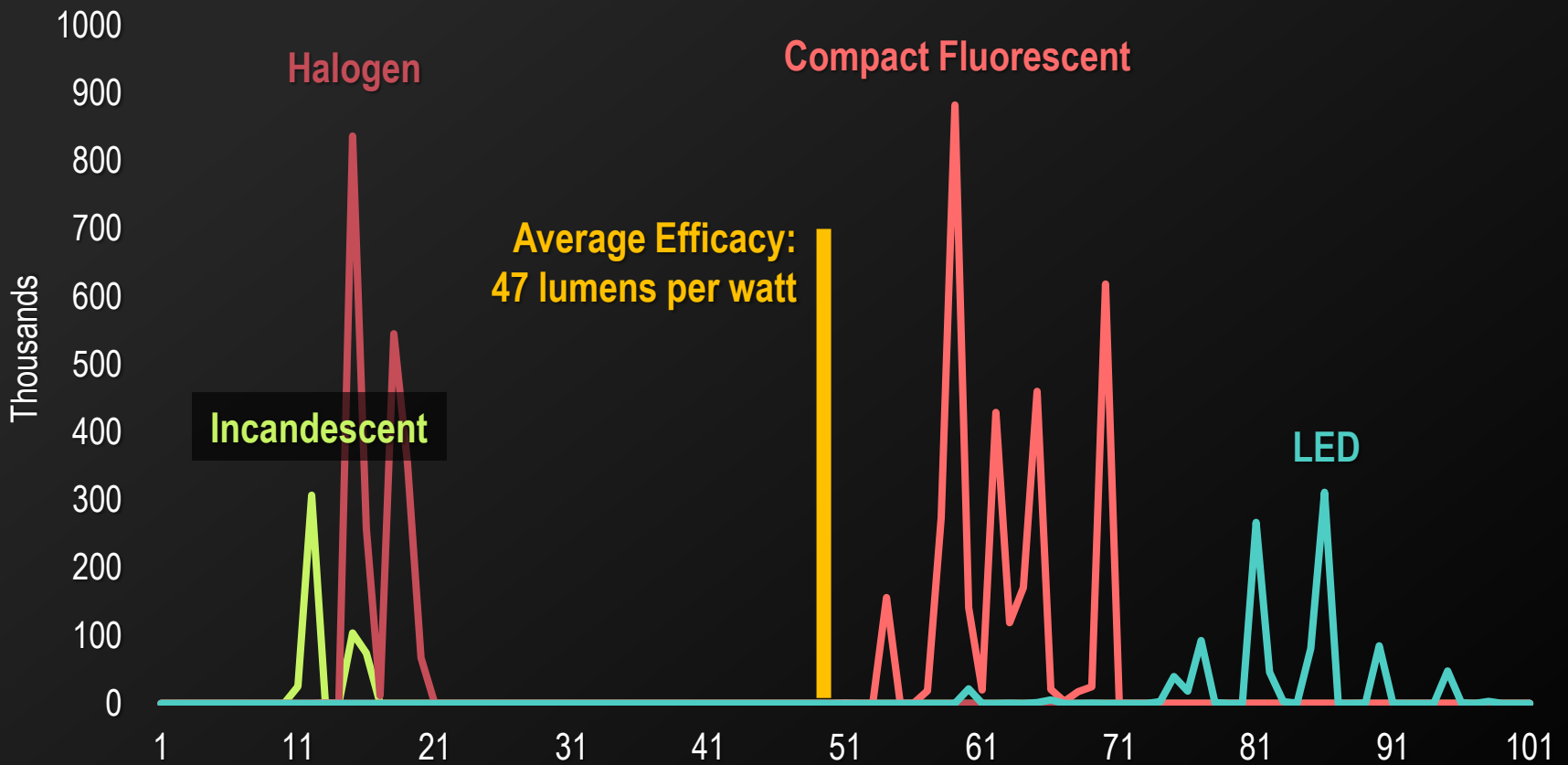
HID UNIT SALES BY TYPE, 2010-2014

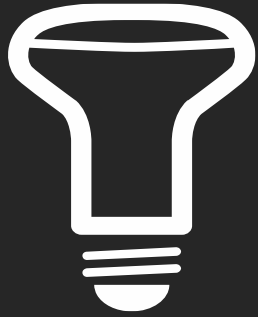


Source: Navigant and Cadex analysis of distributor sales data



60W GENERAL PURPOSE (18%)





REFLECTORS, 310-749 LUMENS (10%)

