From: Crawford, Juli E. - Director Financial Planning & Analysis <crawje@jea.com>
Sent: Friday, January 11, 2019 2:54 AM
To: 'Sarah Brody'
Cc: Blackshear, Victor L. - Manager Financial Planning & Rates
Subject: Status Quo Baseline Presentation
Attachments: Basline Conversation 1.10.pptx

Sarah, I've included the presentation with my notes, and tried to incorporate yours as well. We will try to hit the ground running tomorrow morning, and can touch base with you at some point tomorrow as well.

Thanks,
Juli

Status Quo Baseline

The first step in the process

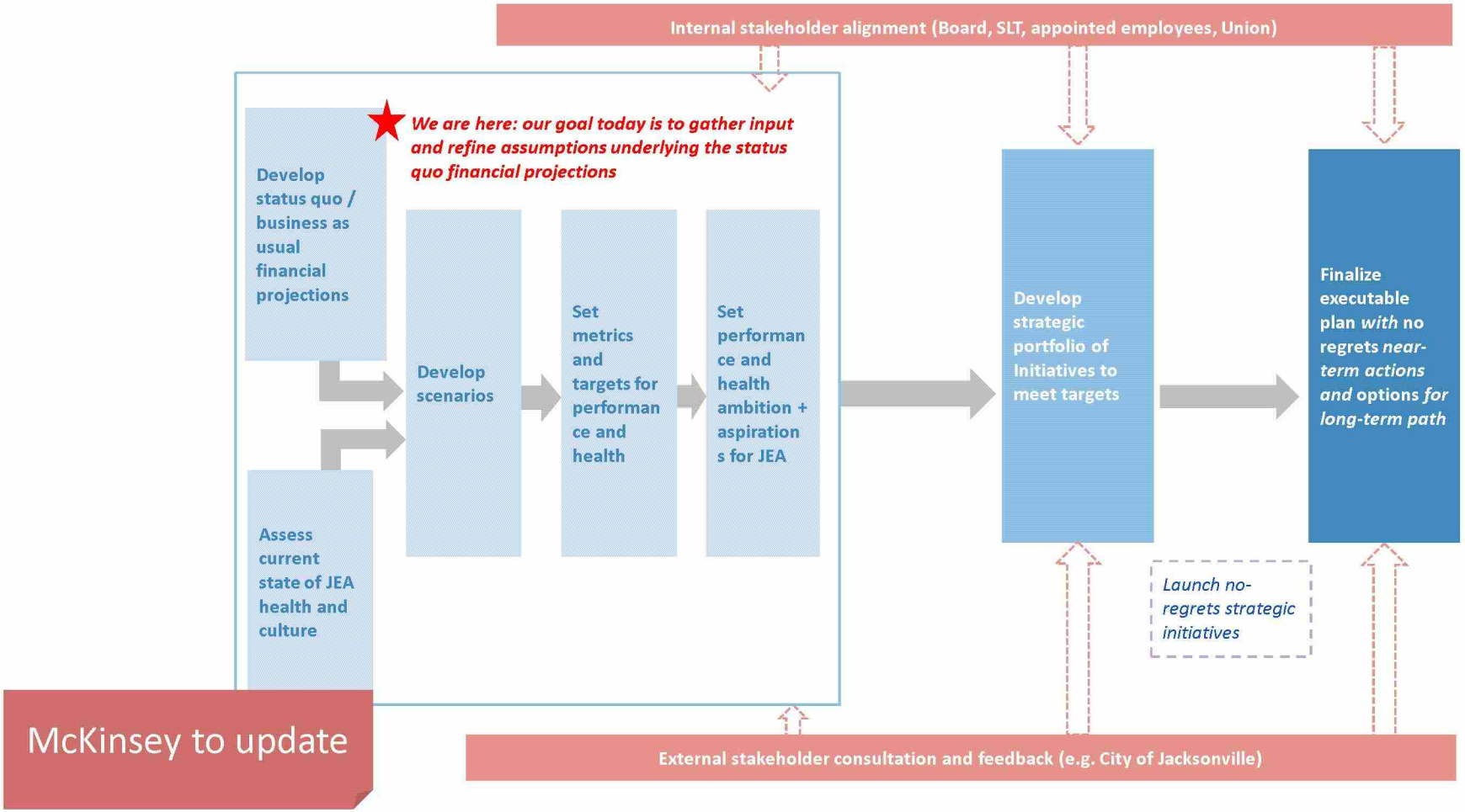
Update language, include context language, include on each slide

Disclaimer

lowing "Baseline Conversation" financial
s are presented solely for JEA Board of Directors
and action. They are not a projection of future financial performance and, as such, should not be relied upon by present or prospective JEA bond investors to purchase or sell any security or to make an investment decision. The projections are merely a mathematical representation of a hypothetical case for change. Actual results are likely to differ materially from this business case.

Today, we will discuss JEA's first step in a broader strategy to succeed.

What does the future look like if JEA doesn't change?



McKinsey to update

Add a slide that shows JEA consolidated/trends and impacts to JEA as a whole business/top down

Add more assumptions and cost drivers, revenue, capex, opex, contribution

Mention what is not included i.e. economy, deregulation, weather, natural disaster, etc.

Add slide with historical forecast – McKinsey?

Executive summary

Water System

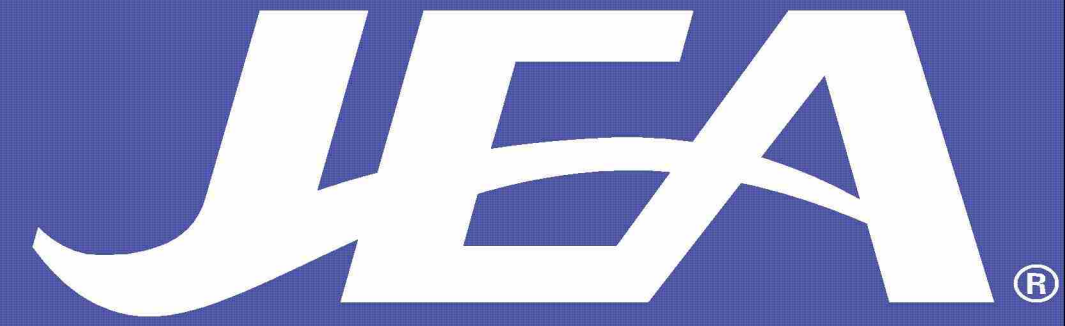
- Water/Wastewater income is forecasted to be **stable through 2030** with funds available for city contribution
- Preliminary forecasts show **continued growth during the period** driven by new connections, though may be offset by continued trend in more efficient use per capita
- While **no significant supply challenges** are forecast in the short-term, JEA is taking proactive steps to address the projected shortage in the South Grid
- JEA's water business can continue to build on its stable financial health to become a **distinctive leader in value to its customers, community, and environment**

Mention regulations will have impacts on sales, cost per kgal and business performance (governor)

Energy System

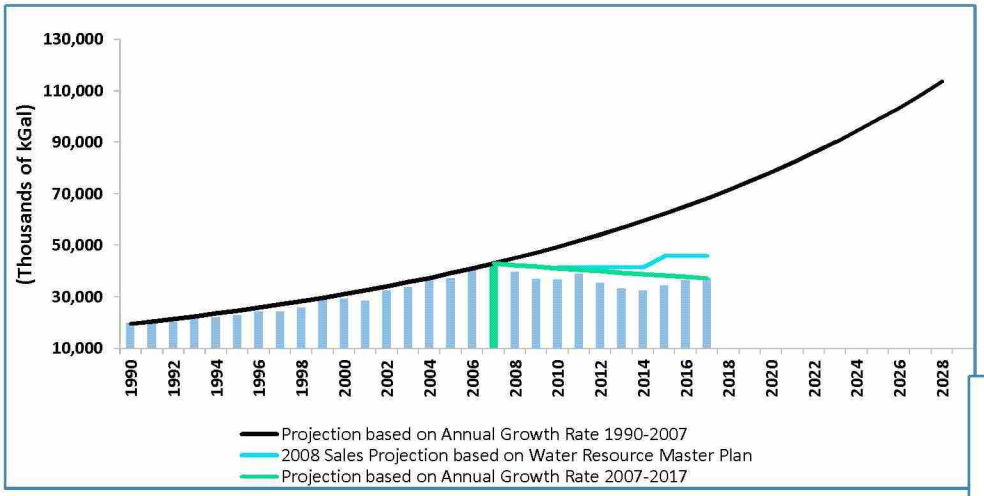
- National trends in energy efficiency and distributed generation have begun to **shape utility energy sales forecasts across the county**
- JEA is no exception, with **declining loads over the past decade** driven by both the economic downturn and energy efficiency gains
- Looking forward to 2030, **strong economic growth will not offset accelerated distributed generation and energy efficiency**, leading to decreased load (7% reduction 2018-30), declining income, and a net loss after city contributions

Water Sustainability Strategy

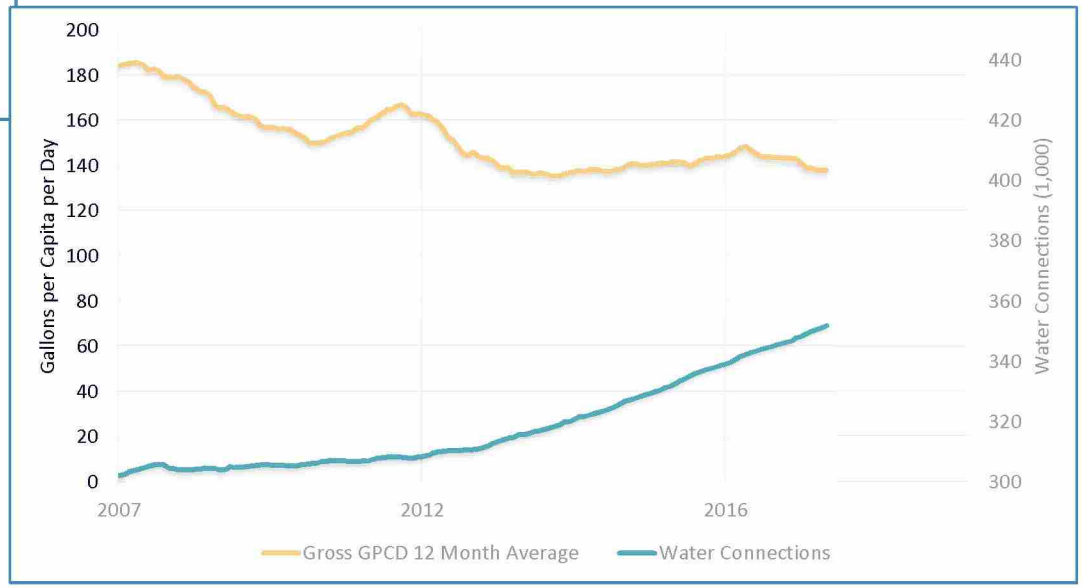


WATER SYSTEM – JANUARY 2019

Historical water usage and sales



There are market influences that could diverge our forecast, up or down…

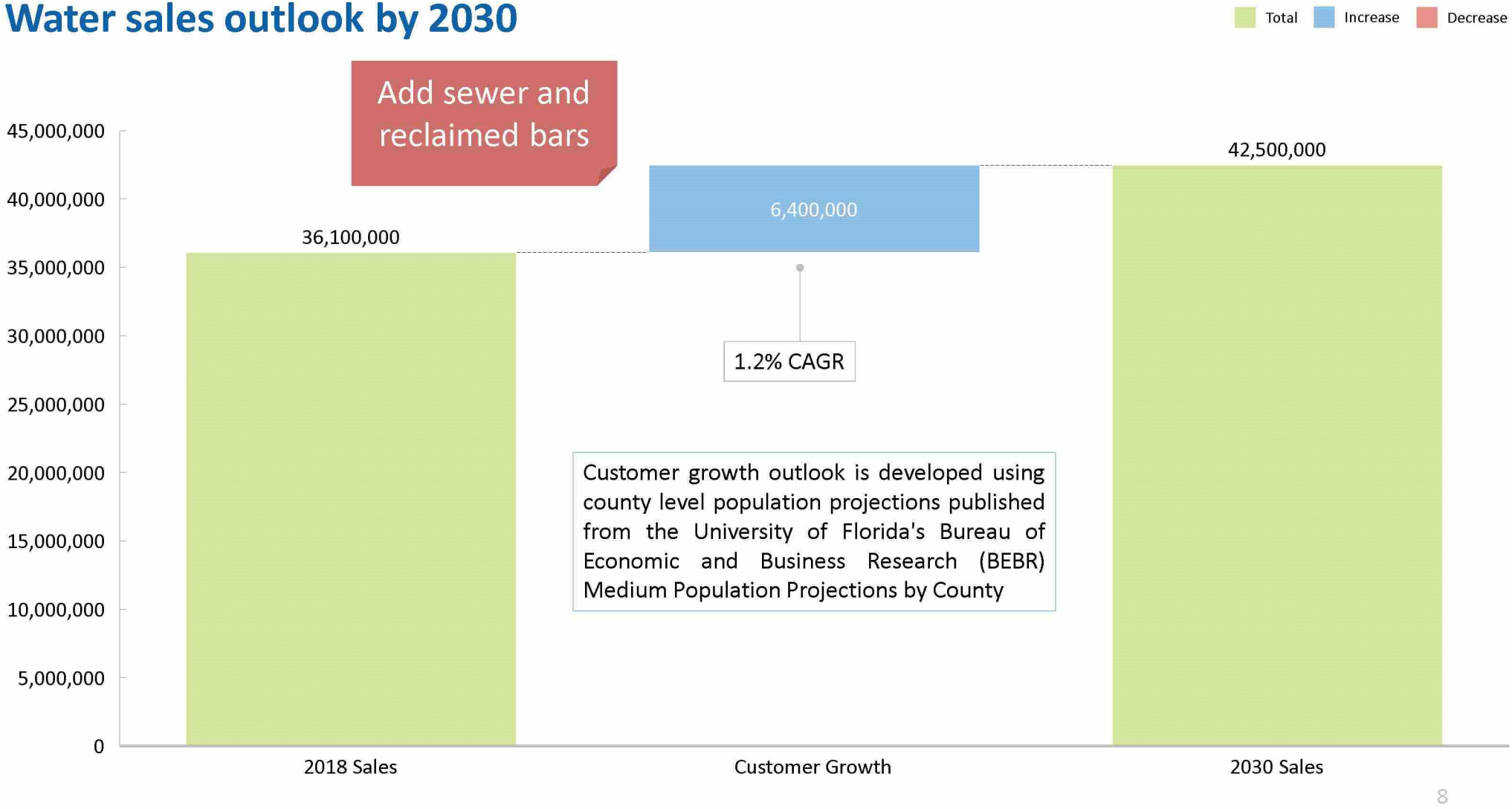


Water connection growth continues, however water efficiencies have stabilized usage per customer

[Slide 7]

Decline due to rates, conservation messaging, efficient housing stock, and re claimed water

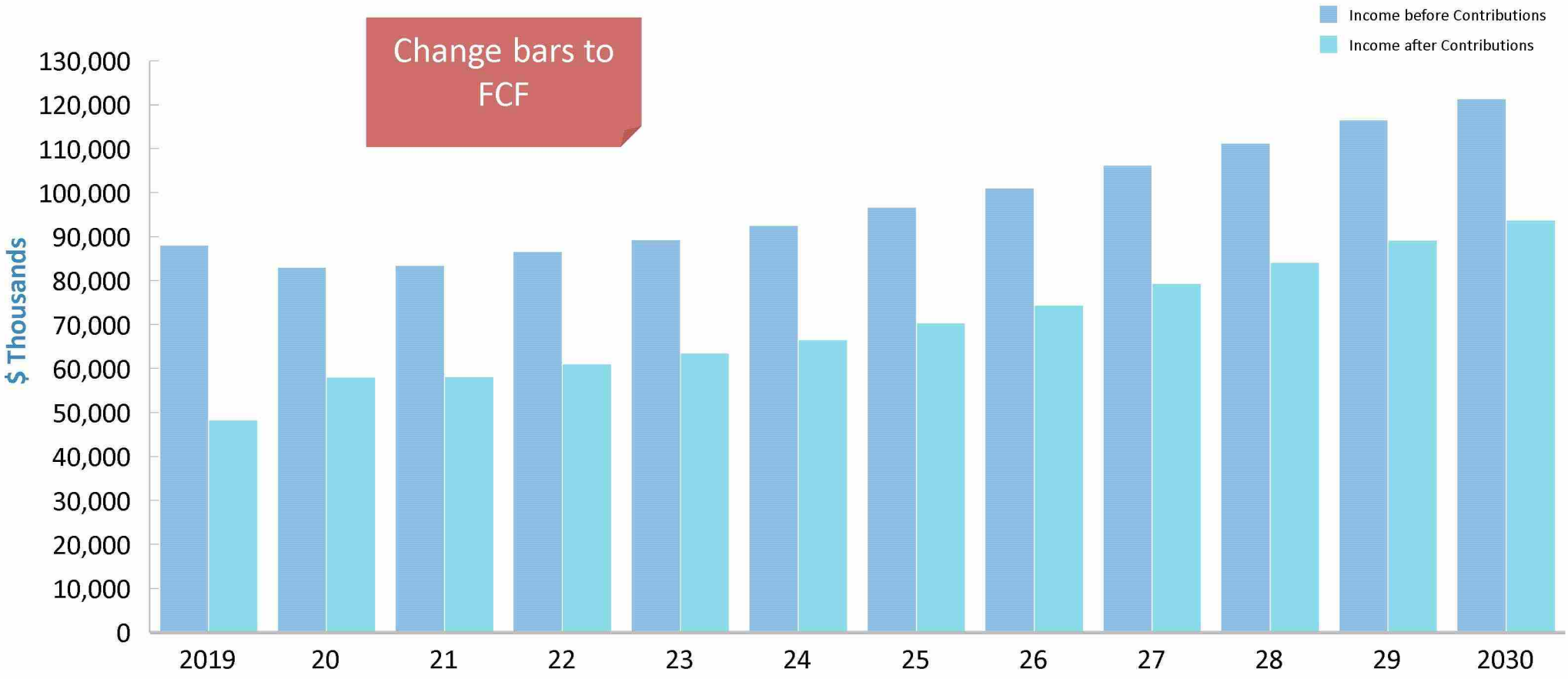
Water sales outlook by 2030



[Slide 8]

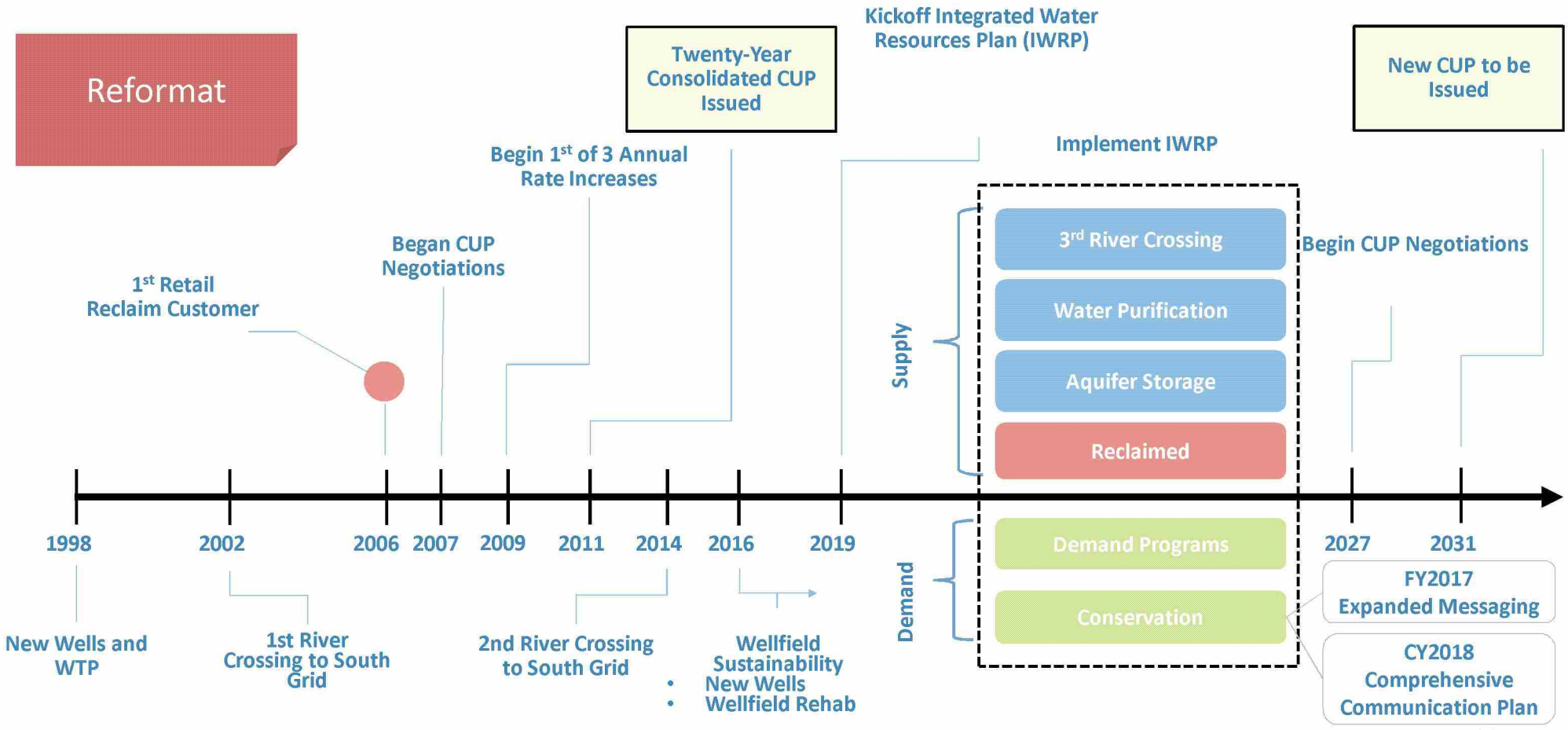
Customer Growth The population in the JEA service territory continues to gro
w with a robust economy. Forecasting 1.25% annual growth between 2018 and 2030.JEA's wa
ter sales outlook is developed using county level population projections published from th
e University of Florida's Bureau of Economic and Business Research (BEBR) Medium Populatio
n Projections by County. JEA forecasted grid demand reflects normalized weather effects o
n water demand and factors in the projected growth of reclaimed water use to offset potabl
e water demand. Note, the most recent year used for the starting point of the sales outlo
ok was a wetter than normal year which affected the outdoor irrigation component of water
demand.

Water/sewer system financial outlook stable



The Water System Income is stable before and after city contributions

Significant milestones achieved in the past & innovative plans for the future will ensure a sustainable resource



[Slide 10]

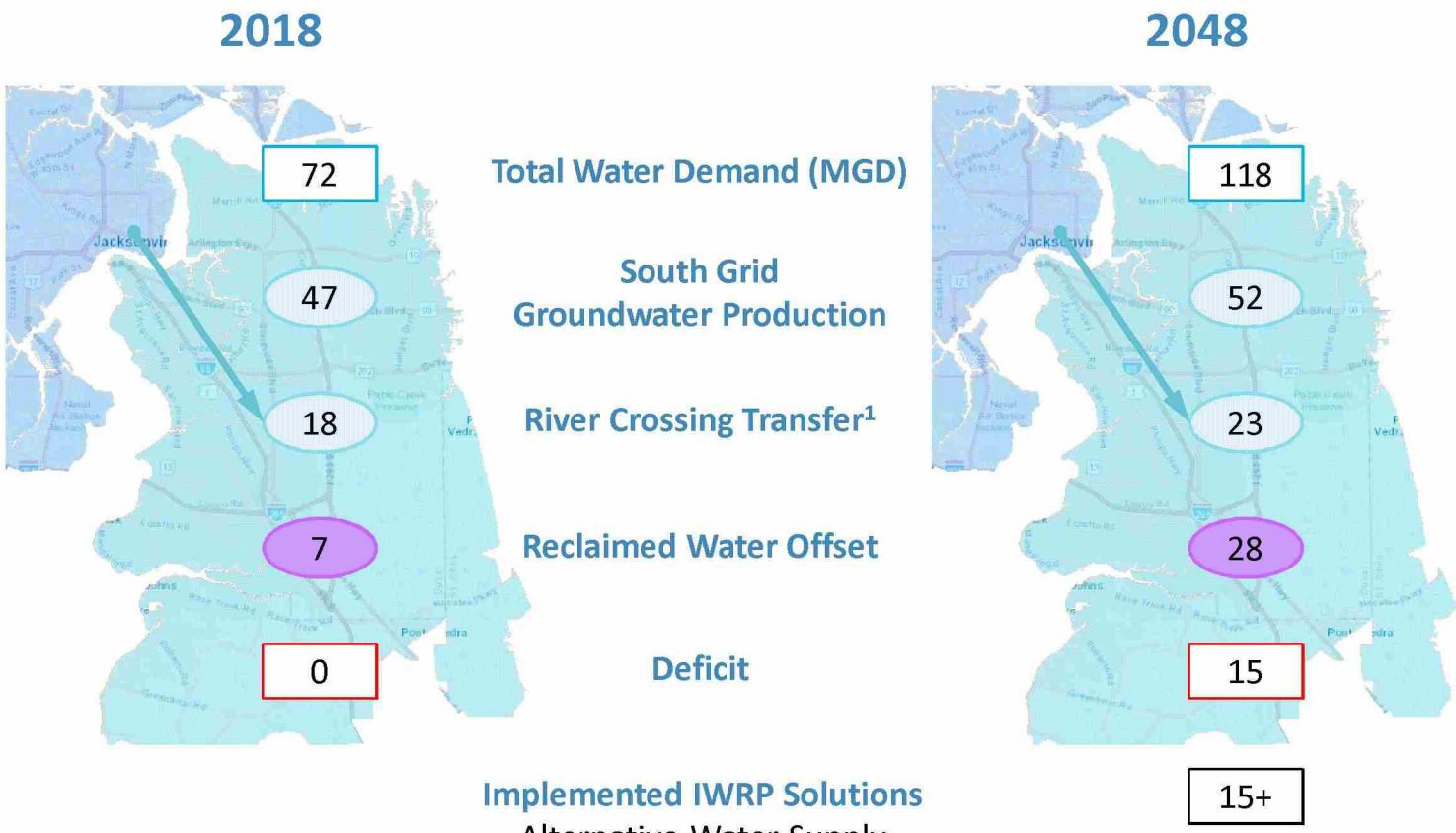
Water use permitting-20 year Consumptive Use Permit (CUP) issued by St John s River Water Management District in 2011-Permit conditions require extensive monitoring and reporting including Wellfield groundwater allocations/reporting, Groundwater monitoring and reporting, Water quality sampling and reporting-JEA in full compliance with current permit

Water system supply outlook challenge

Expand on water assumptions?

South Grid Groundwater Production was approximately 75 MGD prior to 2011

2011 CUP reduced South Grid allocation to 52 MGD



Implemented IWRP Solutions
Alternative Water Supply
Demand Side Management
Etc.

JANUARY 2019

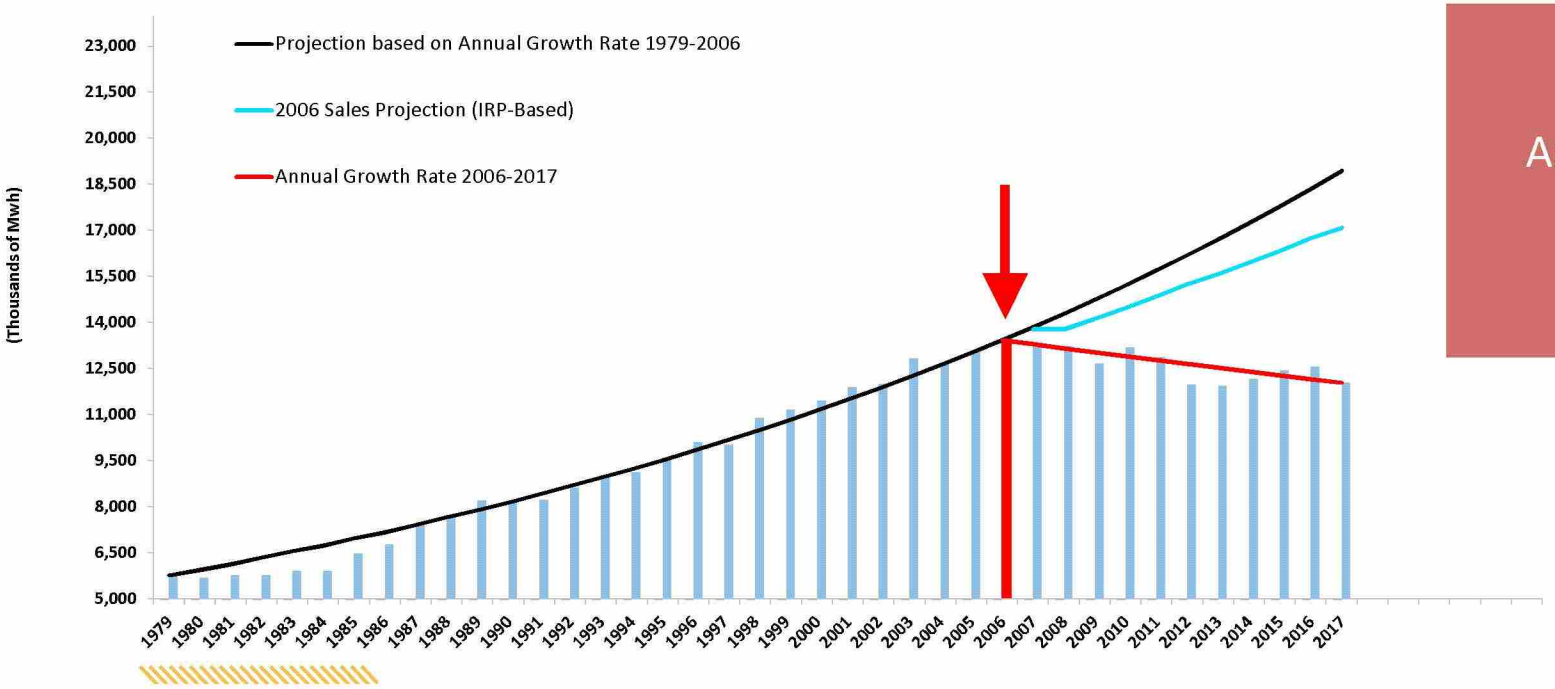
Water Sustainability

[Slide 11]

Proceeding with IWRP JEA will determine:-future alternative water supply op
tions, costs, and limitations-Continued expansion of Reclaimed Water System-3rd River Cr
ossing-Comprehensive Demand Side Management study to determine water conservation options
and implementation planAlso, Implementing the next phase of the purified water project
(proceeding with 0.5 – 1 MGD demonstration project)

Energy System Projections

History illustrates that changing market conditions can quickly alter sales projections



Include dollars
Add # of customers
Add jobs

- In 2006, we forecasted to sell 17,000 GWh
- In 2017, and we ended FY at 12,000 GWh
- 30% lower sales in 2017 than forecasted back in 2006

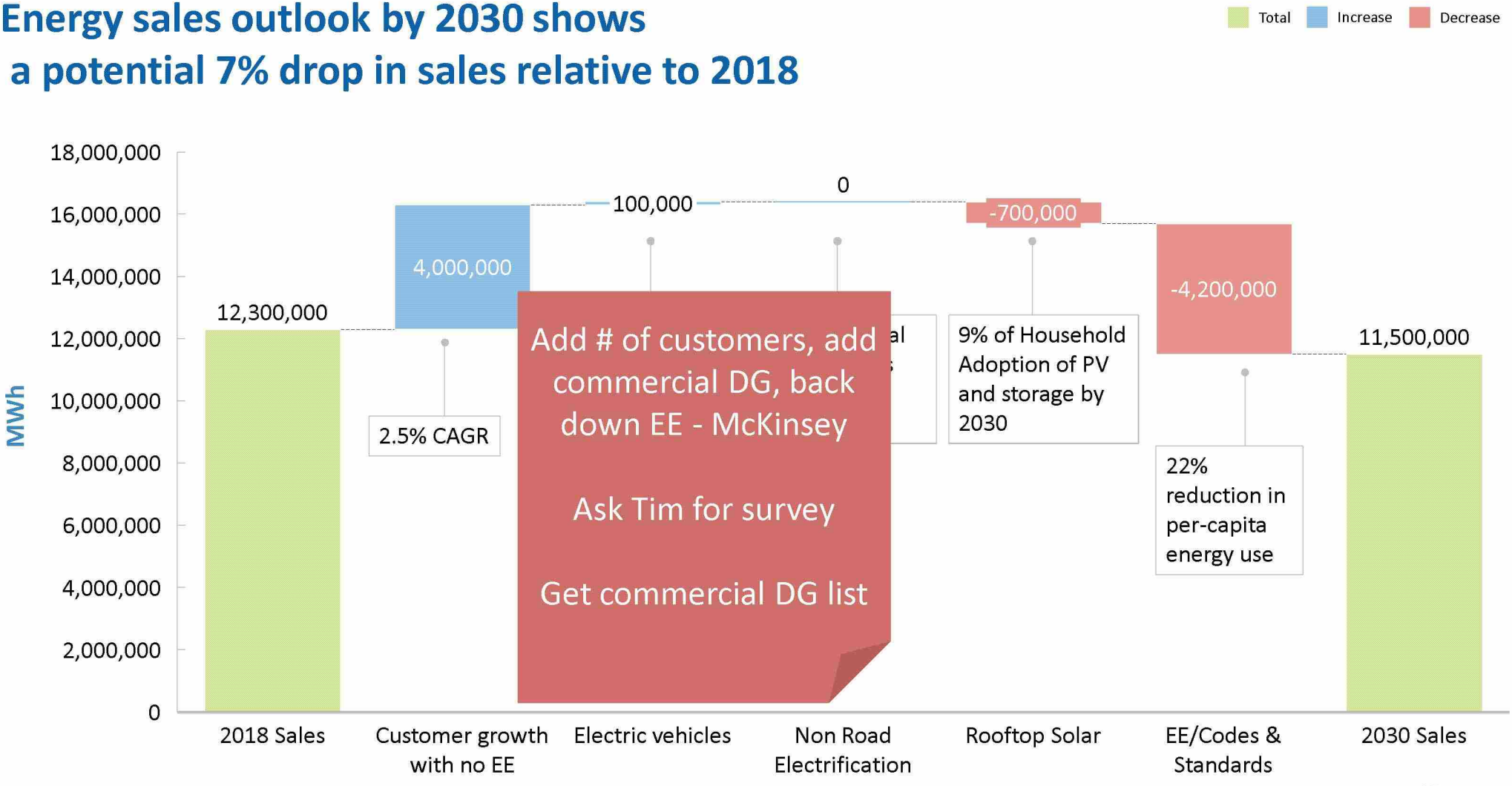
JEA's demand forecast is driven by trends affecting utilities nationwide

	National trends	Assumptions used for JEA
Electric vehicles (EV)	• EV adoption is growing steadily in the US, with 200k EVs[1] on the road in 2017 • Over **2M EVs** are expected on the road by 2030, constituting **7-12% of light duty vehicles**	• **3.5% of cars on the road expected to be EV's by 2030 (30K total)** driving **95k MWh** of increased energy sales
Distributed generation (solar)	• There are **60 GW of solar** installed in the US (as of December 2018); forecasted to grow to over 100 GW by 2021 • Distributed solar accounts for ~**40% of installed solar capacity** in the US (half of which residential), and residential is expected to outpace large-scale growth	• Solar+storage becomes cost effective in 2023, driving 9% of residential customers to adopt by 2030, offsetting **700k MWh** of energy sales
Energy efficiency & new technology adoption	• Energy efficiency has been a major driver of decreased energy sales in the past decades; improvements since 2000 led to a **10% reduction in US energy expenditures and $140 energy savings per capita** • **Efficiency is expected to continue to improve as key energy-saving upgrades have low penetration today** (e.g. heat pump water heaters)	• New home tech upgrades and continuation of service territory trends drive **22% reduction in residential sales per capita** from 2018-30 Illustrate impacts to $

1 "EV" includes PHEV and BEV

Source: McKinsey automotive forecast, SEIA, EIA, Edison Foundation

Energy sales outlook by 2030 shows a potential 7% drop in sales relative to 2018



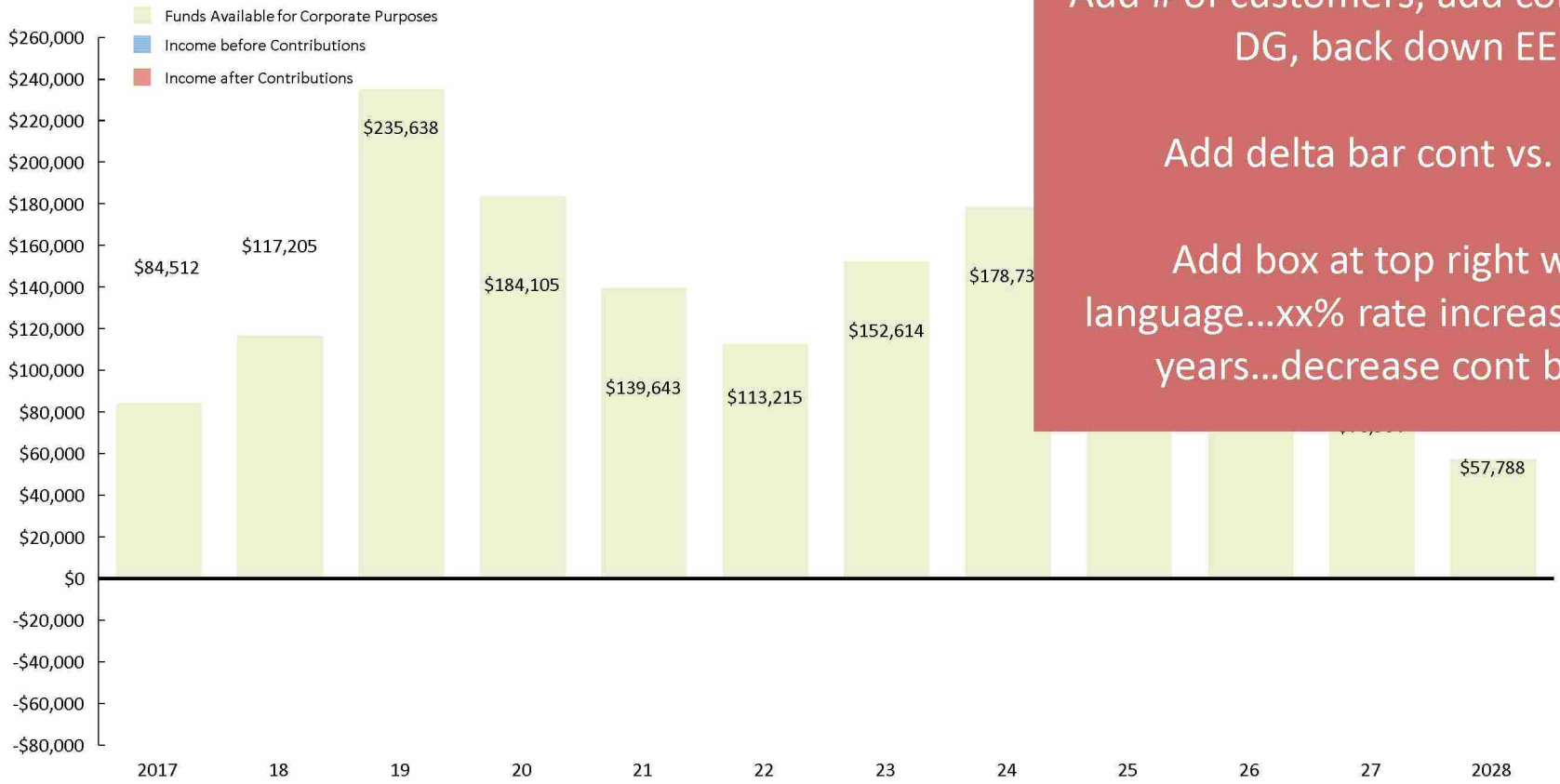
[Slide 15]

Anticipating 3.5% penetration in Jacksonville by 2030

Add slide with case studies from other fixed cost busineses/Netflix/other utilities - McKinsey

Add slide with levers and what moves/rates/payback/affordability – McKinsey?

Electric system financial outlook challenge



Edit chart with updated numbers
Add # of customers, add commercial DG, back down EE

Add delta bar cont vs. FCF

Add box at top right with language…xx% rate increase over x years…decrease cont by $x

[Slide 17]

Rate increases to meet pricing policy standardsDo not raise rates to increa
se profitability or the contributionSteady cost structure

Reduced energy sales forecast drives a challenging financial outlook for JEA by 2030
if JEA were to take no action

While the call to action is clear, JEA has several potential responses:

- JEA can deploy … rove its financial outlook and succeed at all strategic … to environmental stewardship
- These respons… **business**, e.g. by expanding existing electrification … f **operational performance**; and **evolving the b**… enefit from DER and other trends
- These and oth… A moves into the full strategic planning effort

Change verbiage, "the time is now"…etc.

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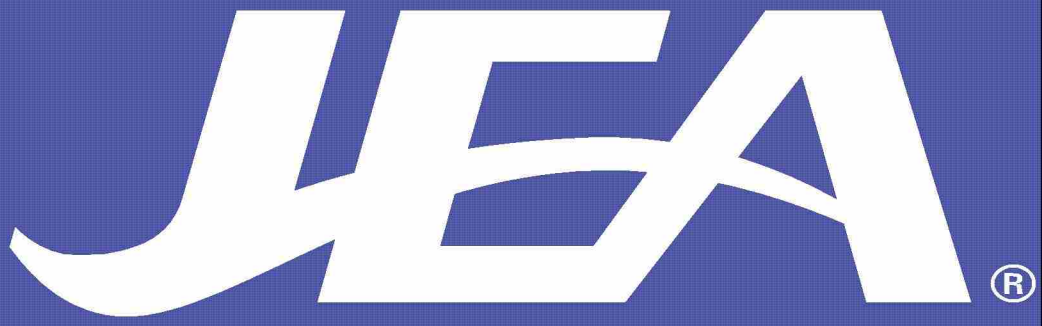
The opportunity at hand

[Slide 18]

Separate res and commercialInclude kwh and customer growth assumptionsRate increase percentage

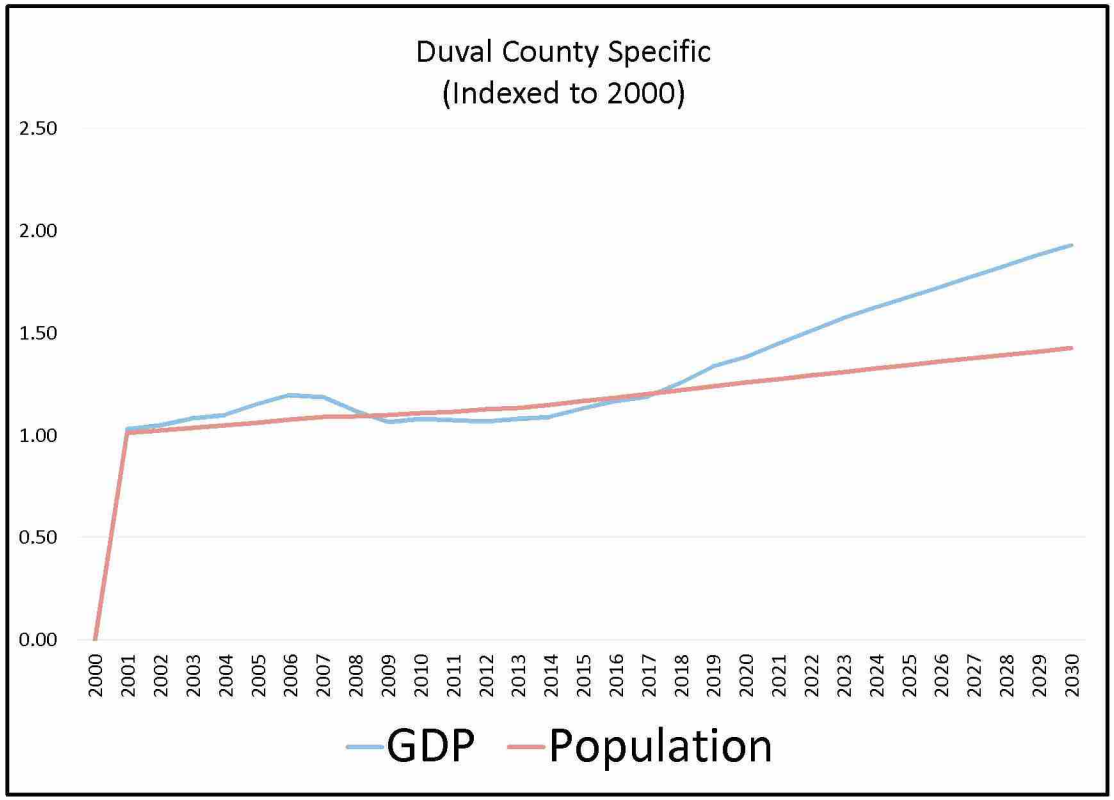
Supplemental Information



ENERGY SYSTEM – JANUARY 2019

Customer growth likely to continue in the foreseeable future

Customer growth projections considers the U.S. Census Bureau (BOC): Population Estimates, Projections; Moody's Analytics Estimated and Forecasted for Duval County



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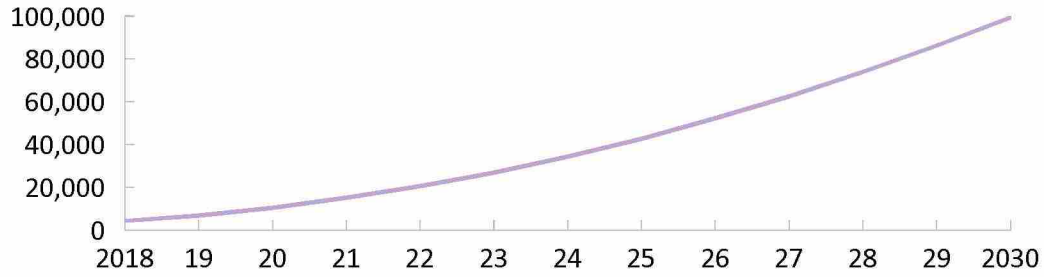
Customer Growth

[Slide 20]

Separate res and commercialInclude kwh and customer growth assumptionsRate increase percentage

30k EVs expected in in JEAs territory by 2030 based on EV modeling and penetration today

Energy added by EV fleet, MWh



100k MWh in energy sales in 2030 because 31k EVs are added to Jacksonville fleet, constituting 3.6% of light duty vehicles

[redacted]

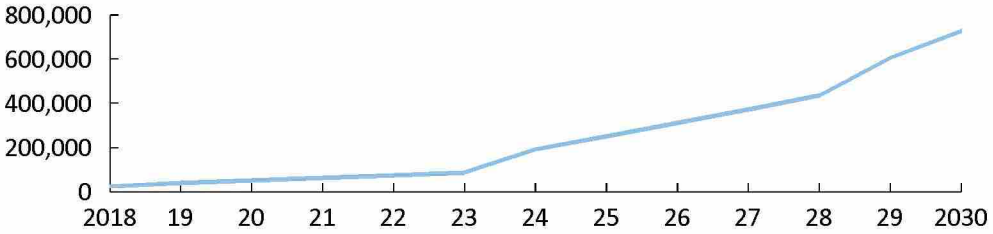
[redacted]

Source: Federal Reserve income per capita data; McKinsey Automotive practice TCO-based forecasting models, Florida Highway Safety and Motor Vehicles , Internal forecasts

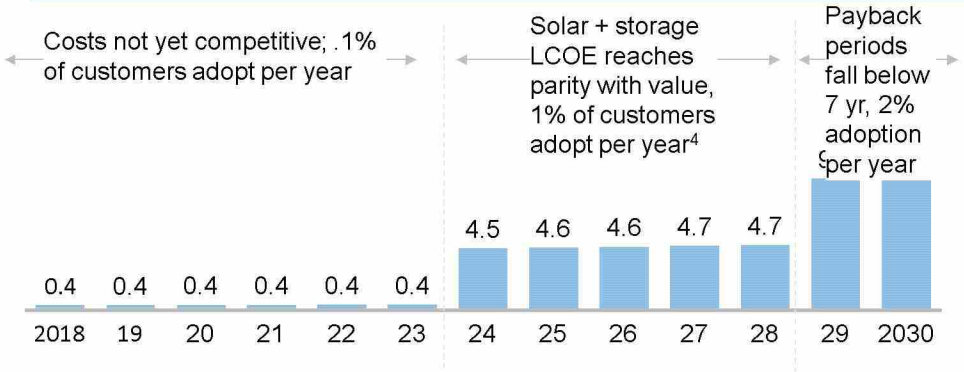
Solar reaching economic parity could lead to significant reduction in energy sales

- 730k MWh in energy sales reduced by 2030, with 45k homes and 1% of C&I load installing DG solar + storage by 2023
- Solar adoption is assumed to be a function of economic parity; once solar makes economic sense, uptake is expected to increase significantly

Energy sales lost to DG solar + storage, MWh



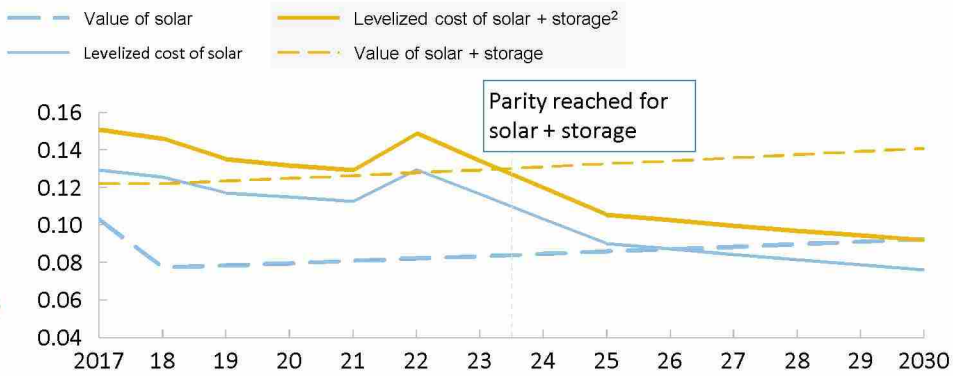
New residential solar + storage customers, thousand households



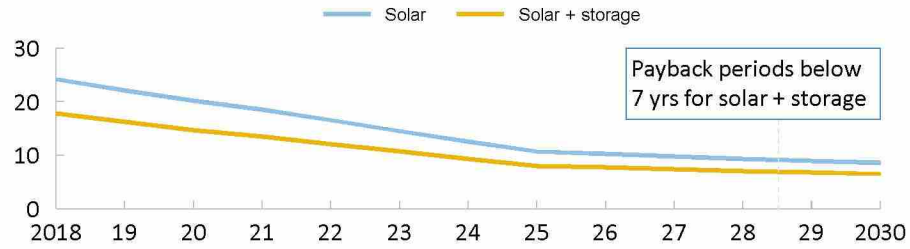
- Solar + storage has a higher value proposition for JEA customers than solar alone
- Though system costs are higher, value increases as well,[3] driving shorter payback periods

Cost and value of solar for JEA customers[1], $/kWh

Currently modeled



Simple payback period for JEA customers' systems,[3] years



1 20 year system life; 7% discount rate; 17% capacity factor; assumes 5-10kW(DC) system size; 2% rate increase YoY based on trends in Europe and Australia

2 Assumes more aggressive solar soft cost declines post-2021 as ITC is phased out; cost reductions appear viable

3 Considers backup as economic value towards payback

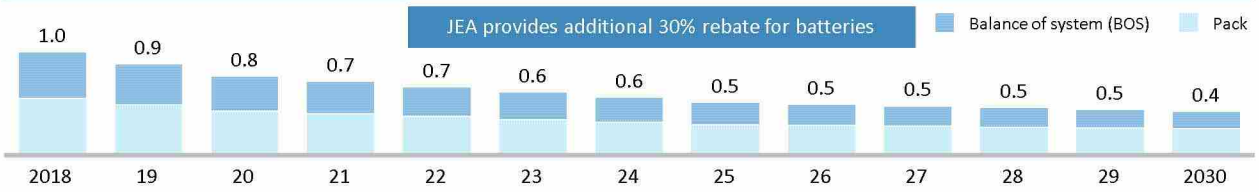
4 Uptake in line with post-parity adoption in other states (e.g., HI, CA)

Source: Sigrin and Drury, Diffusion into New Markets: Economic Returns Required by Households to Adopt Rooftop Photovoltaics, NREL

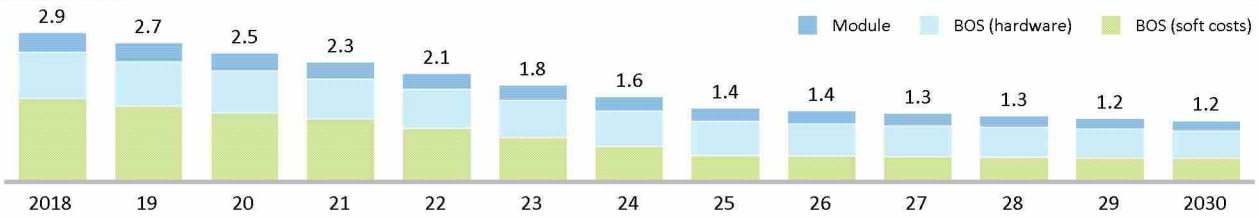
Economic parity driven by decreasing soft costs and potential added value of storage

Both solar and battery costs decline over the forecast period…

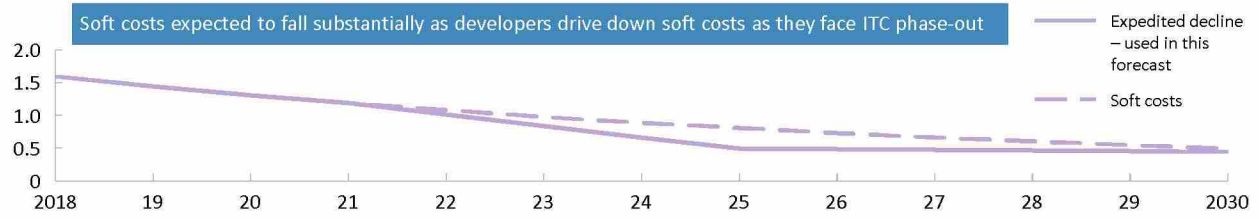
Battery costs, $/W



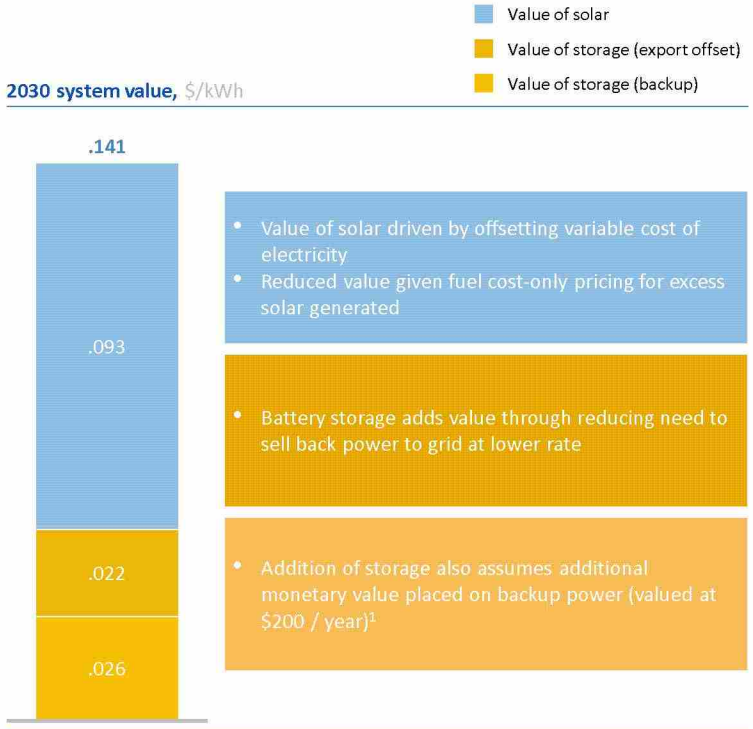
Solar costs, $/W



Solar soft costs, $/W



…While Batteries add value to system due to willingness to pay for backup storage and reduced need to export energy



Storage adds incremental value as part of home DG solution, particularly when backup power is a major consideration

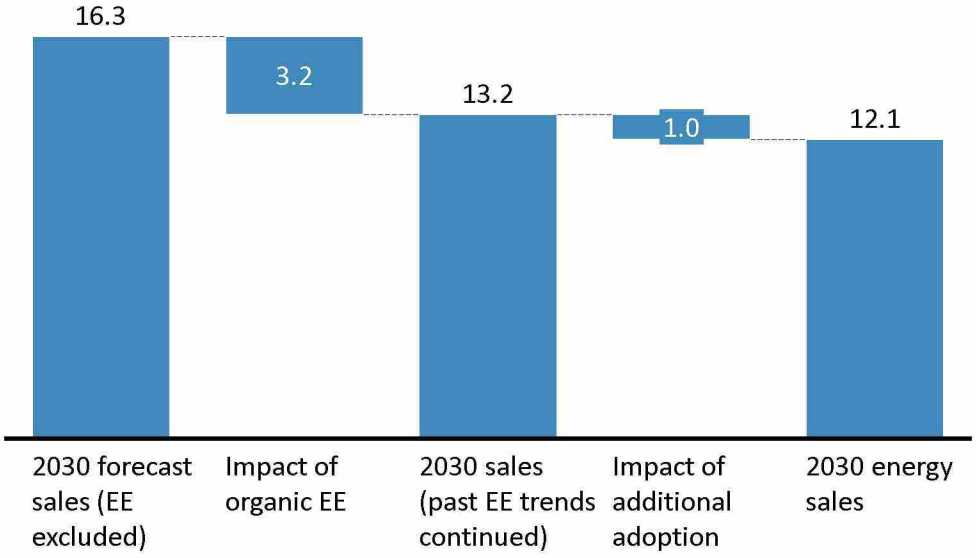
1 Battery economics assume consistent willingness to pay premium for backup power in region

Source: McKinsey, SEIA

Energy efficiency momentum is the largest driver of energy sales reductions, consistent with US utility trends

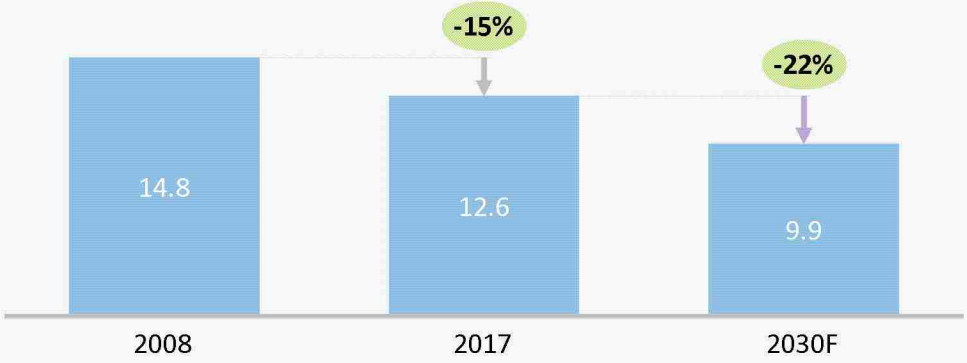
Discussed in additional detail on following page

2030 energy sales (independent of solar, EV), TWh

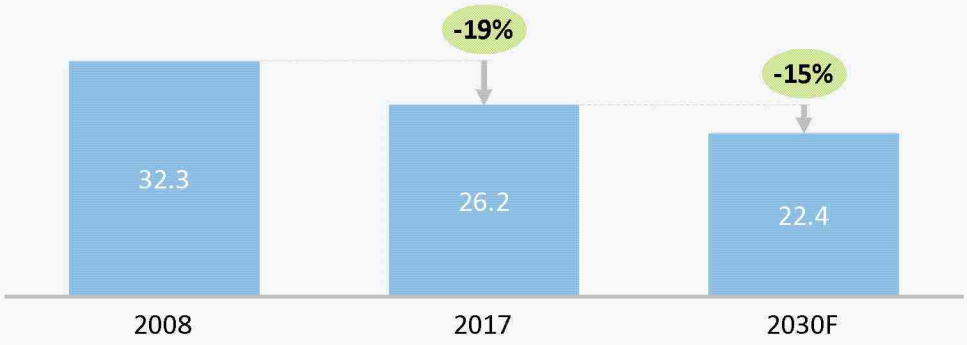


- Organic EE includes continued adoption of energy efficient products as these products become more efficient, as well as the continuation of general building trends, e.g. gas connections
- Additional tech includes higher uptake of products and active decisions to purchase more economic solutions, e.g. heat pump water heaters

Residential consumption per capita, kWh/customer



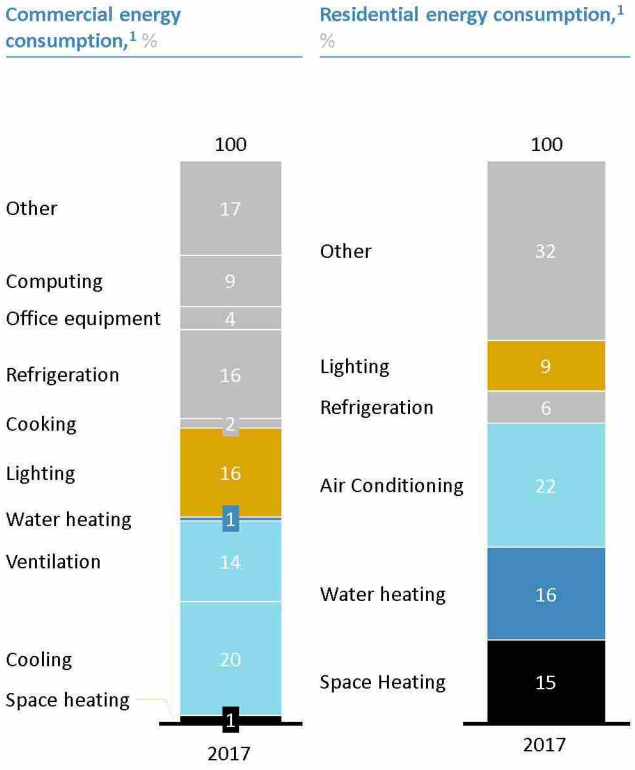
Customer consumption per capita (all customers included)[1], kWh/customer

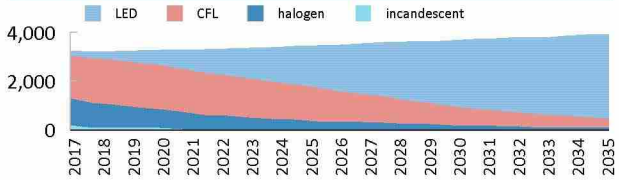
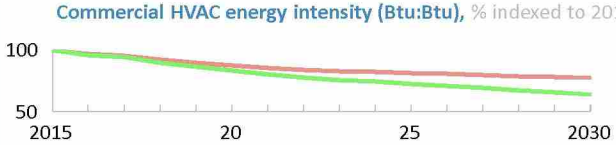
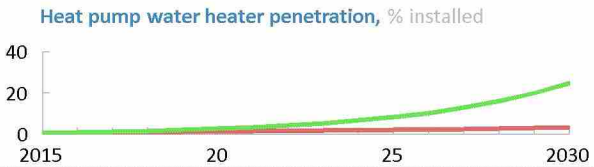
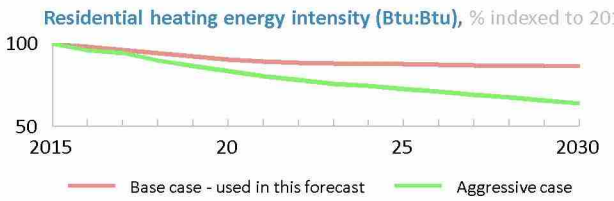


1 Includes Residential, Commercial, Industrial customers; C&I customer characteristics vary significantly

Source: JEA forecast, PowerIQ

Natural EE improvements with new products will drive up EE; consumer choices regarding new water and space heating technologies can have outsize impact on efficiency



Main drivers	Trends	Reduction assumptions
Lighting		LED installed stock penetration increases to ~80% for commercial, residential and industrial customers
HVAC		New units are 0.4% - 0.9% more efficient for the same level for each year between manufacture, resulting in natural EE as inventory turns
Water heating		Improvements in efficiency of resistance units have nearly plateaued; decision to switch to heat pump water heaters would have outsize impact. 3-4% install heat pump water heaters by 2030
Space heating		Adoption of heat pumps reduces winter heating in adopted homes by 50%-60%; expecting 5-10% adoption

1 ECS breakdown, South Atlantic, %

Source: EIA RECS 2015 and CBECS 2012, Pathways database, McKinsey analysis