From: Blackshear, Victor L. - Financial Analysis Specialist <blacvl@jea.com>
Sent: Friday, September 21, 2018 1:15 PM
To: Crawford, Juli E. - Manager - Financial Planning & Rates
Cc: Schlossman, Scott N. - Financial Analyst Sr. Planning & Rates; Davis, Eric M. - Financial Analyst Senior Financial Planning & Rates
Subject: Urgent: Status Quo Update
Attachments: DRAFT JEA Status Quo Case_9-21.pptx

Juli,
We know the formatting needs some work, but take a look at our latest attempt on Electric. If you like this direction, we will apply a similar approach to the water.

Victor Blackshear
21 W. Church Street
Jacksonville, FL 32202

JEA®

Disruptive Innovation Analysis

Disruptive Innovation

The JEA Enterprise systems face increasing pressure from disruptive innovation. A disruptive innovation is an innovation that creates a new market and value network and eventually disrupts an existing market and value network, displacing established market-leading firms and products. As we all know, disruptive innovation has changed phone service [iPhone], video rental [Netflix], retail sales [Amazon], and taxi [Uber/Lyft] industries.

JEA, and its predecessor organizations, has been the market leader for providing electric, water, and sewer services to northeast Florida for over 100 years. Increasing innovation threaten the stability of the core businesses of JEA.

The Electric Enterprise faces threats from increasing rooftop and commercial solar penetration, energy efficiency, and the advancement of battery technology. Electric vehicles and non-road electrification can offset some of the erosion by solar and battery technology and energy efficiency.

The Water Enterprise faces threats from growth in constrained water supply areas due to JEA's CUP limits, and legislation requiring stricter treatment and discharge criteria.

This analysis is an examination of the disruptive innovations affecting the JEA systems. There are several assumptions made in this analysis as to how these innovations and changes will affect traditional JEA revenue sources (electric, sewer, and water sales).

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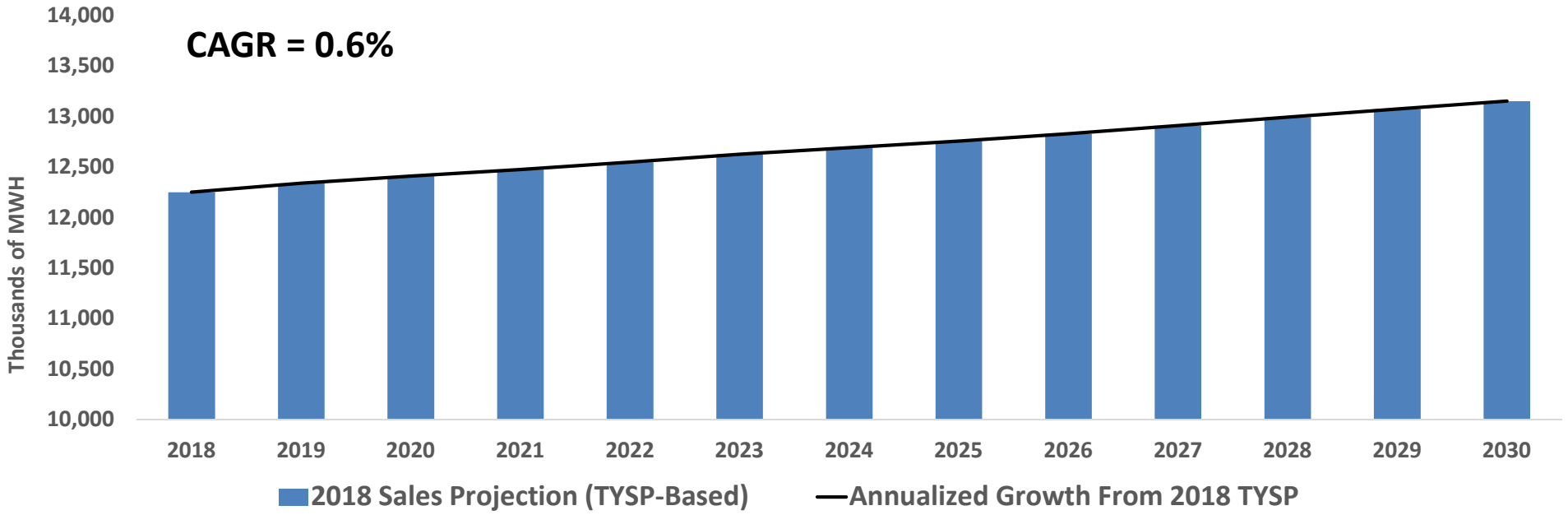
JEA STATUS QUO CASE

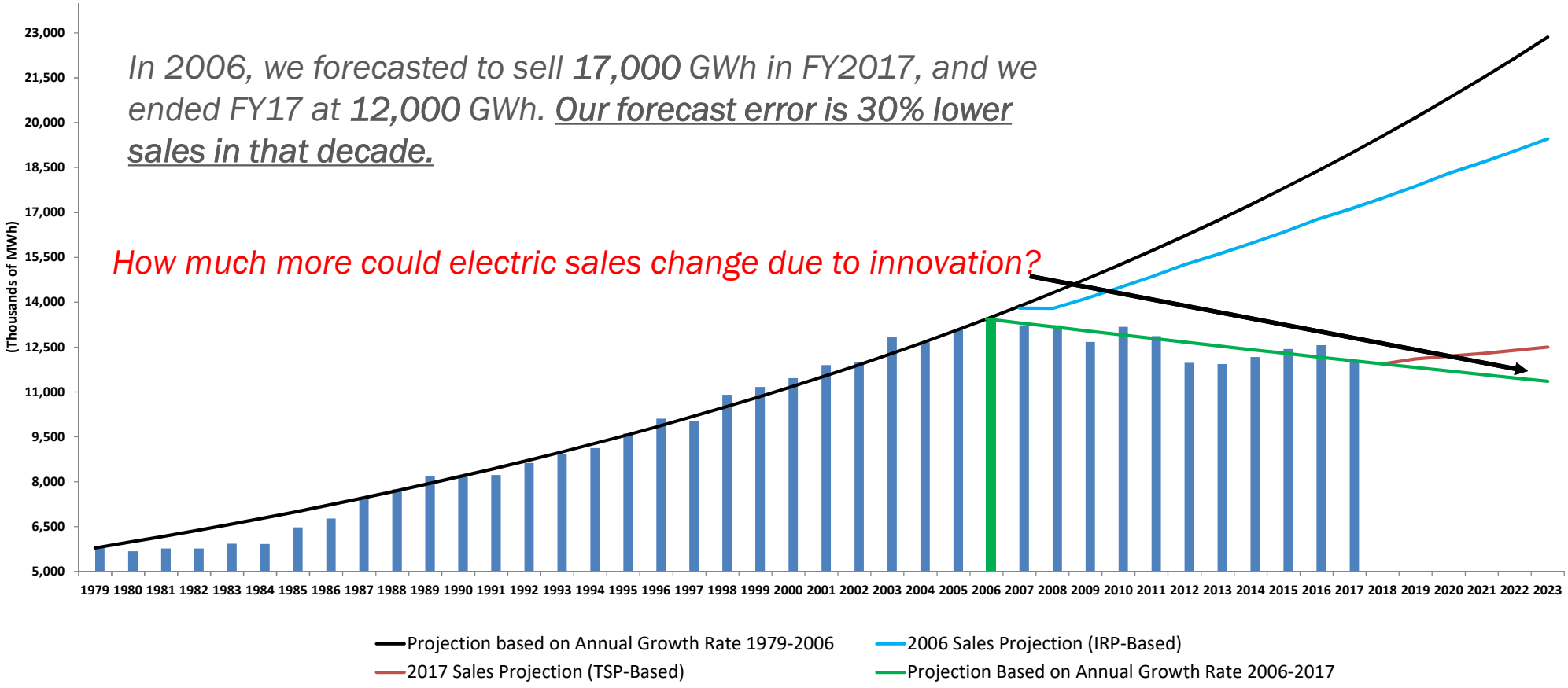
CURRENT ELECTRIC FORECAST = GROWTH



GROWTH JEA electric sales are forecasted using multiple regression analysis of sales history, population, median household income, housing starts, commercial square footage, commercial employment, gross product, and electric rates in the JEA Ten Year Site Plan (TYSP).

However, recent history has taught us that market forces can change this trend

JEA HISTORICAL ELECTRIC PROJECTIONS AND SALES

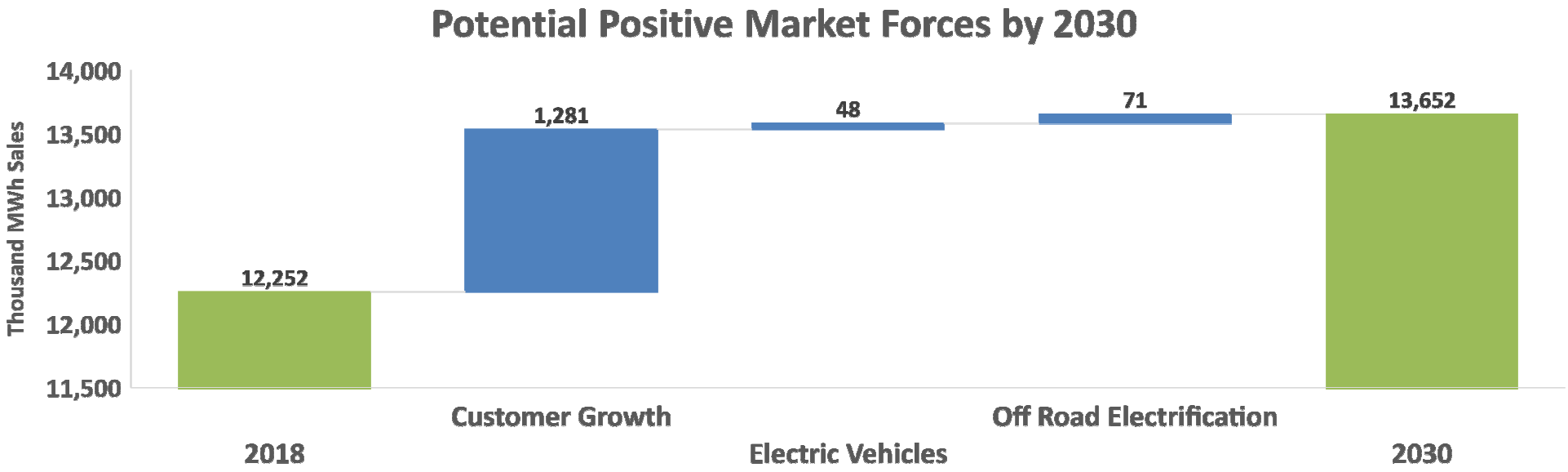


There are market influences that could quickly diverge our forecast, up or down…

POSITIVE ELECTRIC MARKET INFLUENCES FOR JEA

Electric Vehicles(EV) Low adoption assumed for Jacksonville, achieving 9 times the 2018 energy in 2030, forecasted based on battery charge and miles driven per day. EV adoption cause an increase in JEA electric sales.

Non-Road Electrification(NRE) Low forecast, achieving 3 times the 2018 energy in 2030 including the assumption to not renew/rebid the FY18-20 electrification contract. Non-road electrification causes an increase in JEA electric sales.



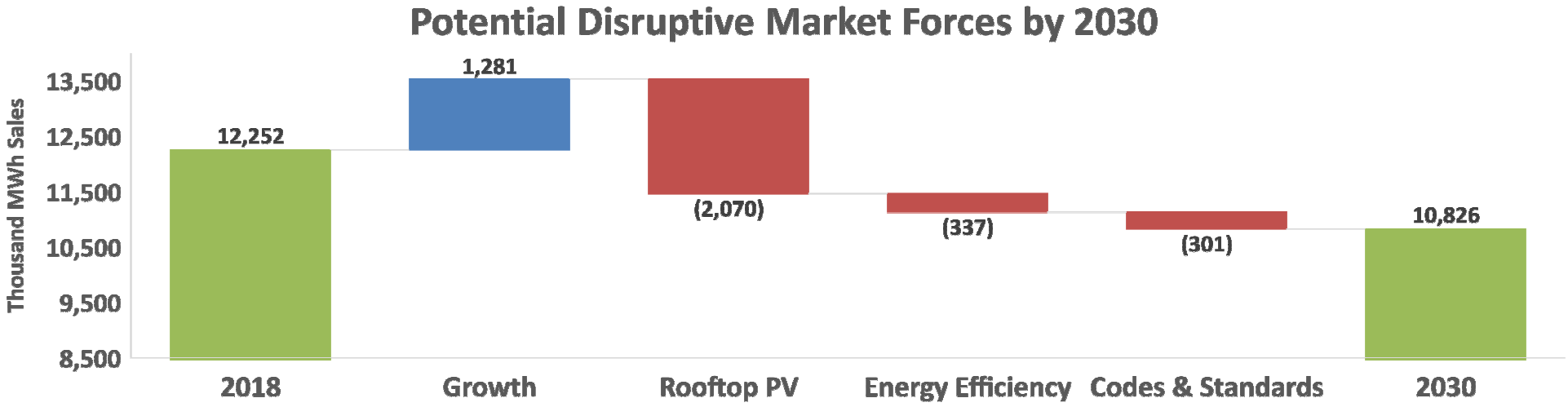
If EV and NRE accelerate, JEA is well positioned to handle it

NEGATIVE ELECTRIC MARKET INFLUENCES FOR JEA

Energy Efficiency (EE) JEA is offering customers both education and economic incentives on more efficient end-use technologies achieving a 24% CAGR between 2018 and 2030

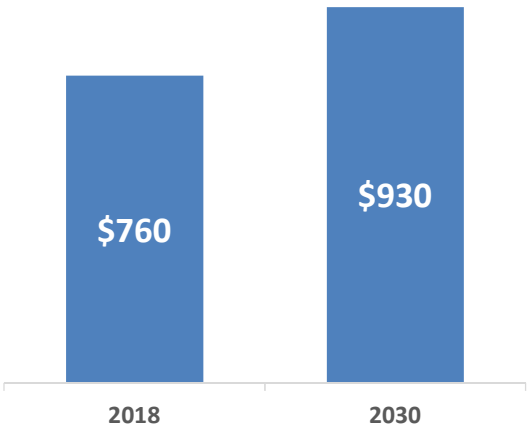
Codes and Standards (CS) Anticipating stricter regulations will lead to 1% CAGR between 2018 and 2030

Rooftop PV (RPV) According to Solar Energy Industry Association (SEIA), total installed PV capacity in the U.S. is expected to more than double over the next 5 years and JEA is taking a more aggressive forecast of 60% CAGR between 2018 and 2030



If EE, CS, RPV accelerate and electrification remains stagnate, JEA customer and financial value become at risk.

Declining electric sales results in significant rate increases to meet higher revenue requirements



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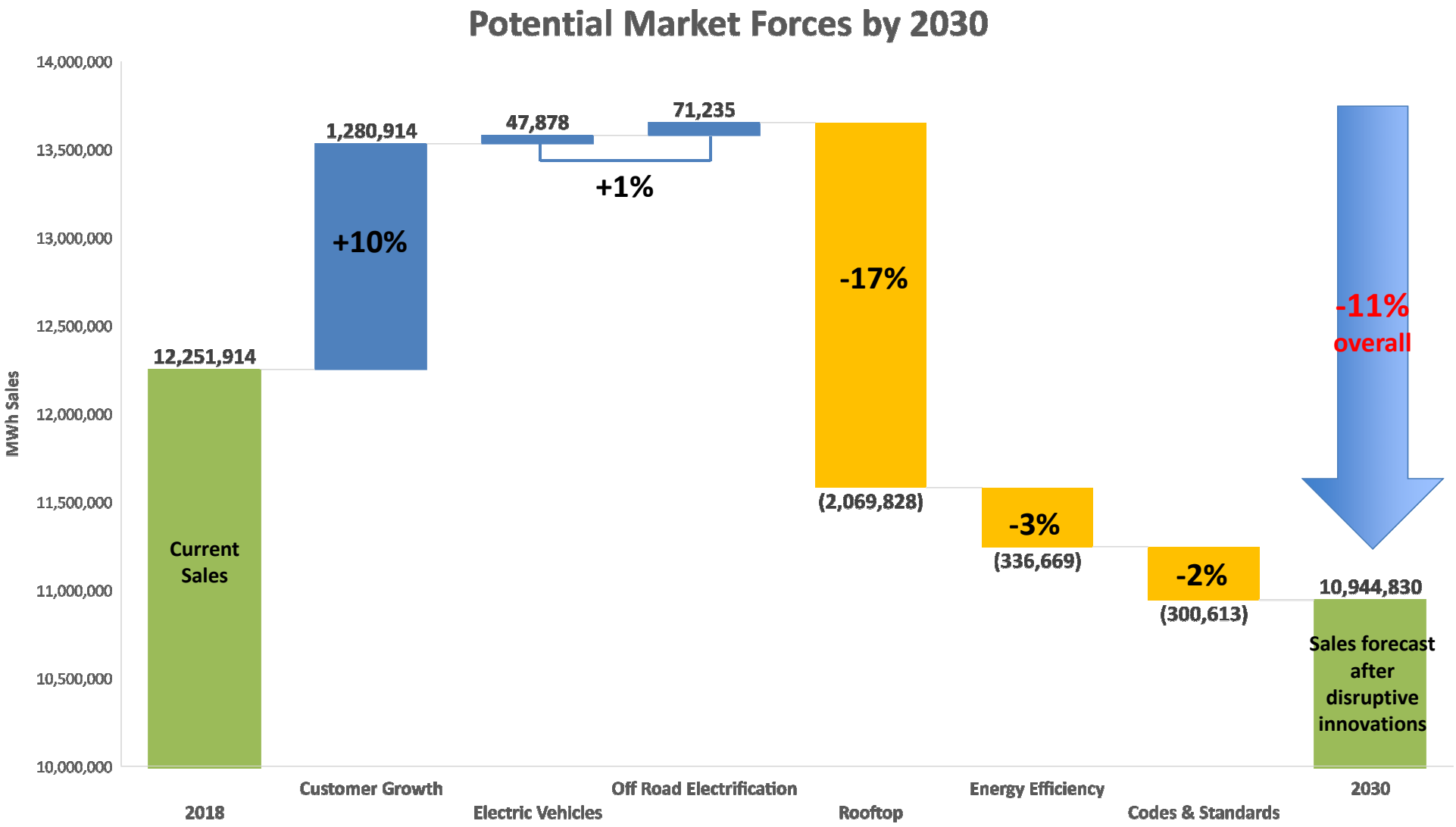
Status Quo: RESULTS IN

- Stranded electric assets
- Fixed debt service obligations
- More pressure to meet the COJ contribution requirement
- Additional revenue required from customers from 2018 to 2030 = $1 billion

Evolution: JEA Charter Change

- A charter change would allow JEA to participate in disruptive innovation.
- For example, JEA could install rooftop and commercial solar, develop and retail storage solutions, expand dark fiber, and other technology.


Potential Market Forces by 2030
14,000,000
13,500,000
13,000,000
12,500,000
12,000,000
11,500,000
11,000,000
10,500,000
10,000,000
MWh Sales
12,251,914
Current Sales
1,280,914
+10%
47,878
71,235
+1%
-17%
(2,069,828)
-3%
(336,669)
-2%
(300,613)
-11% overall
10,944,830
Sales forecast after disruptive innovations
2018
Customer Growth
Electric Vehicles
Off Road Electrification
Rooftop
Energy Efficiency
Codes & Standards
2030

WATER MARKET

Growth

JEA water sales are forecasted using multiple regression analysis of sales history, population, weather, and socio-economic variables.

Water Efficiency

JEA water production is governed by the consumptive use permit (CUP) issued by the St. Johns River Water Management District. The current permit is valid through the year 2031 for a system total of 142 MGD. JEA Water/Wastewater Planning projections for this time period does not exceed the total CUP limit for combined JEA grids. There is the slight possibility that SJRWMD will reduce JEA's total CUP after 2031. There is some localized CUP limit pressure (namely the Southside grid) that will impact water supply decisions before 2031.

Alternative Water Supply

JEA Water/Wastewater System Planning will implement alternative water supply (AWS) options to ensure water demand is met in areas that are encroaching on their CUP limits. These alternative solutions have varying degrees of success and cost associated with them. AWS options include purified water, increased reclaim program, demand side management, and, at the extreme, desalination.

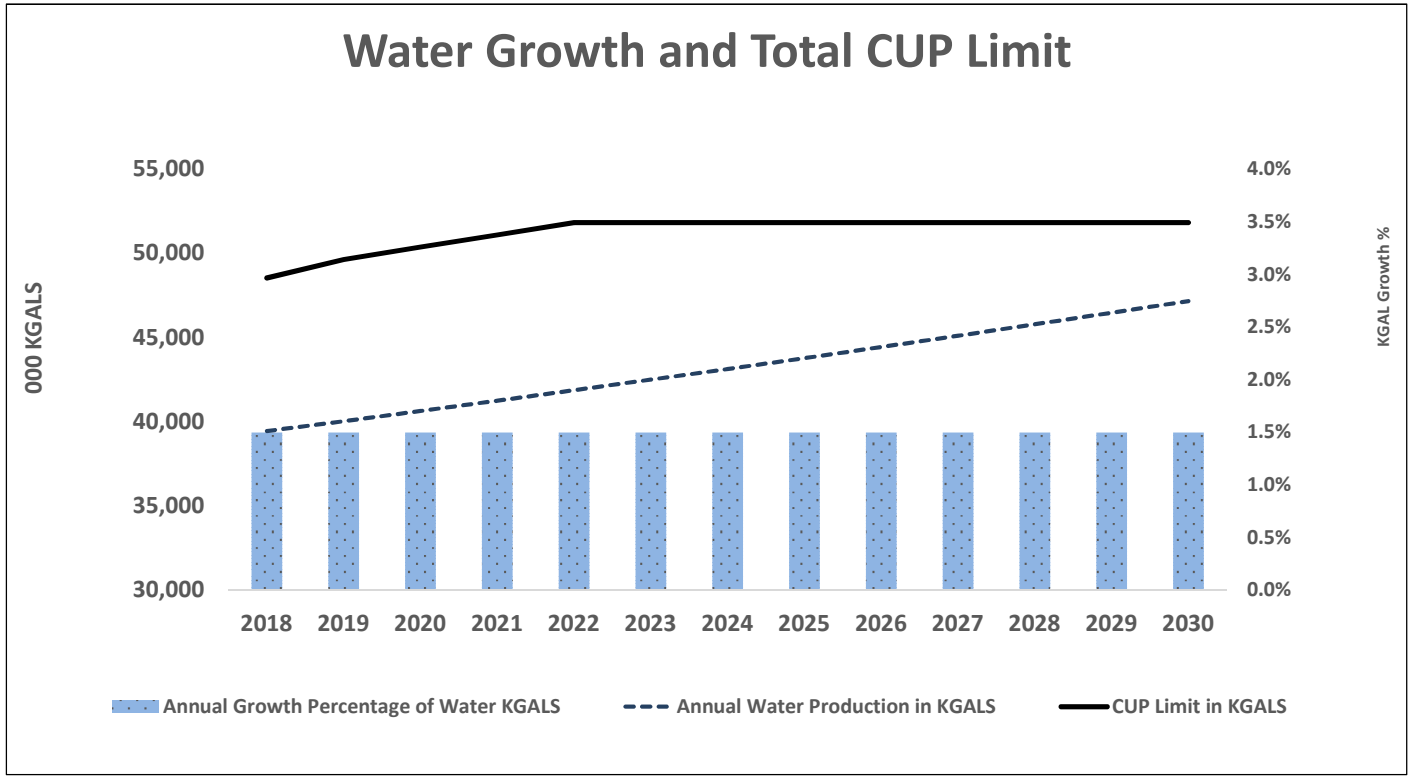
Water Quality

Currently, the St. Johns River Water Management District does not regulate JEA on mineral discharge into the waterways. The District may choose in the future to regulate utilities and other companies on nitrogen or phosphorous discharge and strontium scale formation. Increased water quality and discharge regulation will increase cost for the water and wastewater systems.

Nitrogen Credits

The City of Jacksonville has an agreement with JEA to trade nitrogen credits. If the city requires JEA to transfer additional nitrogen credits in the future, JEA will have to implement alternative wastewater solutions to fulfill this requirement.

JEA Water Sales vs. CUP Limits



An extreme scenario of a sharp decline in population, significant economic downturn, or declines in per capita consumption would result in additional revenue required from customers, however these scenarios are unlikely.

Alternative Water Supply

a. Total O&M cost assumed to be $1.00/1000 gallons
b. Total O&M cost assumed to be $1.50/1000 gallons(Based on Vander Lans and GWRS O&M costs)
c. Total O&M cost assumed to be $1.20/1000 gallons (Cost of Brackish Groundwater Desalination in Texas, 2012, Texas Water Develop Board)
d. Total O&M cost assumed to be $2.20/1000 gallons (Based upon a + c. Assumes some pretreatment similar to Ozone/BAF would be required for Surface Water RO)
e. Adjusted to January 2018 dollars (RSMeans Historical Cost Indexes)
f. Purification Cost only – no storage/transmission mains/injection wells)

Data from Todd Mackey - Dir W/WW & Reuse Treatment

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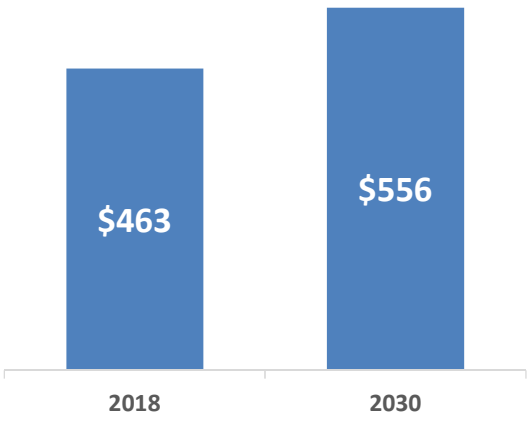
Water Supply Option	Capacity (mgd)	Capital Cost ($Millions)[e]	O&M Annual/Year ($ Millions)	Cost per year Capital ($Millions)*
Demand-Side Management	5	$6	$1.0	$0.4
Reclaimed Retrofit	1	$19	$0.1	$1.2
TWMP	20	$107	$2.0	$7.0
Third River Crossing	25	$230	$1.7	$15.0
Water Purification - Ozone/BAF [a,f]	10	$100	$3.7	$6.5
Water Purification - UF/LPRO [b, f]	10	$100	$5.5	$6.5
RO of Brackish Groundwater [c]	10	$73	$4.4	$4.7
RO of Brackish Surface Water [d]	10	$138	$8.0	$9.0

Table from Todd Mackey - Dir W/WW & Reuse Treatment (* Assumes capital costs are amortized at 5% for 30 years)

*Localized growth results in AWS investment funded with new debt and rate increases**



**assuming 1% water/sewer growth*

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AWS

- JEA has to use alternative water supply to meet specific grid demand. For example, if the Southside grid is expected to exceed its allocated CUP limit, JEA could invest in a local water purification plant.
- This 25 MGD plant would cost $250M in capital and additional $10M annual O&M.

...RESULTS IN

- New debt for AWS capital investments
- Require a 5% rate increase in 2025

JEA CURRENT FRAMEWORK

Florida Public Service Commission

- Require electric power conservation and reliability within a coordinated grid
- Approve territorial agreements and settle territorial disputes
- Prescribes uniform systems of accounts & rate structures for all electric utilities
- This includes oversight that the total revenue requirements of utilities are collected fairly from all customer classes.

City of Jacksonville Charter

- Article 21.01: Established JEA for the express purpose of acquiring, constructing, operating, financing, and otherwise having plenary authority with respect to electric, water, sewer, natural gas, and such other utility systems as may be under its control now or in the future.
- Article 21.04: If JEA determines that it is…appropriate…to provide…any other utility system or function…JEA shall by resolution identify such additional utility system…to the council
- Article 21.07: There shall be assessed upon JEA…from revenues of the electric…and water and sewer system…after the payment of all costs and expenses incurred by JEA in connection with the operation…JEA shall pay the city combined assessment from the electric system and the water and sewer system.

St. Johns River Water Management District

- The district sets minimum flows and levels for rivers, lakes and springs to ensure that water use does not cause significant harm to these important resources.
- JEA's consumptive use permit (CUP) allows water to be withdrawn from groundwater or surface water for reasonable-beneficial uses — such as public supply (drinking water), agricultural and landscape irrigation, commercial use and power generation

JEA Pricing Policy

- Primary goal is to establish revenue requirements to fully recover the costs necessary to operate and maintain the utility, consistent with its mission, through fair and equitable pricing
- The total revenue requirement of each system must be sufficient to ensure the financial integrity of the utility, including recovery of debt service, sufficient revenue to meet renewal and replacement fund requirements, and maintenance of key financial metrics

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Conclusion

TBD