

Introducing the 2022

# Integrated Resource Planning Process



Building Community



# Thank You

We Appreciate Our Stakeholders



Raynetta Curry Marshall  
Chief Operating Officer

JEA couldn't accomplish the goals for our Integrated Resource Planning without you, our community stakeholders.

An IRP is designed to create a framework and guideposts for future action and decisions, rather than a set-in-stone plan or checklist. Accordingly, over a series of meetings with you, we will facilitate conversations and ensure an open and transparent conversation about how JEA can best serve our community's energy needs. We won't ask you to make binding decisions or vote on specific proposals but rather, continually seek and respond to your valuable input and unique perspectives.

Through your engagement, we will be able to prepare for Northeast Florida's energy needs long into the future. Your participation will allow us to:

**Inform:** We will share information about trends, challenges and opportunities facing the electric utility industry.

**Listen:** We want to hear your suggestions and understand your perspectives as integral members of our community.

**Incorporate:** Your input will help us shape the right framework for framework for decisions about our community's power supply.

You and your organization represent the diverse community we serve. We appreciate the value your time and effort will bring to the future of JEA and our region.

In gratitude,

Raynetta Curry Marshall, P.E.

# About JEA

JEA proudly serves an estimated 500,000 electric, 379,000 water, 299,000 wastewater and 21,000 reclaimed water customers.

The City of Jacksonville established JEA to serve those who live in Jacksonville and in the surrounding communities. The sole purpose of our business is to meet the electric, water and sewer demands of our customers, both today and for generations to come. Our goal is to provide reliable services at the best value to our customers while protecting our areas' precious natural resources.

JEA owns and operates an Electric System with four generating plants, over 744 circuit miles of transmission lines and more than 7,200 miles of distribution lines. JEA also purchases energy from several solar sites located across the service territory, covering approximately 350 acres of land, with over 330,000 solar panels installed.

JEA's Water System consists of 137 artesian wells that tap into the Floridan aquifer. Water is distributed through 38 water treatment plants and over 4,900 miles of water lines.

Wastewater is collected from a four-county area through more than 4,200 miles of wastewater collection lines and is treated at 11 wastewater treatment plants.

Our Reclaimed Water System supplies highly-treated water for irrigation. This helps reduce demand on the potable water supply taken from the Floridan aquifer. JEA maintains over 470 miles of reclaimed water lines to distribute reclaimed water to over 21,000 reclaimed water customers.

JEA is committed to improving lives and building community with the goal of being the best utility in the nation.

## Our Core Values

### SAFETY

We put the physical and emotional wellbeing of people first, both at and away from the workplace.

### RESPECT

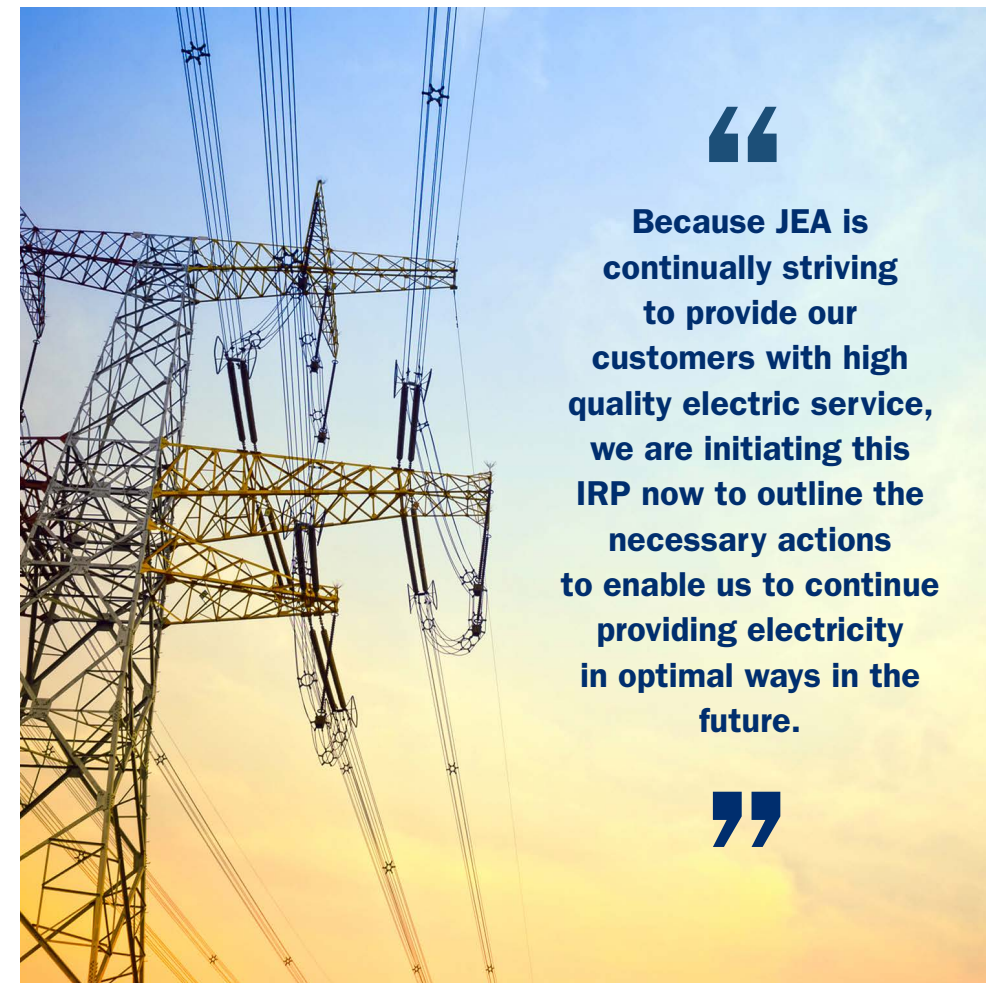
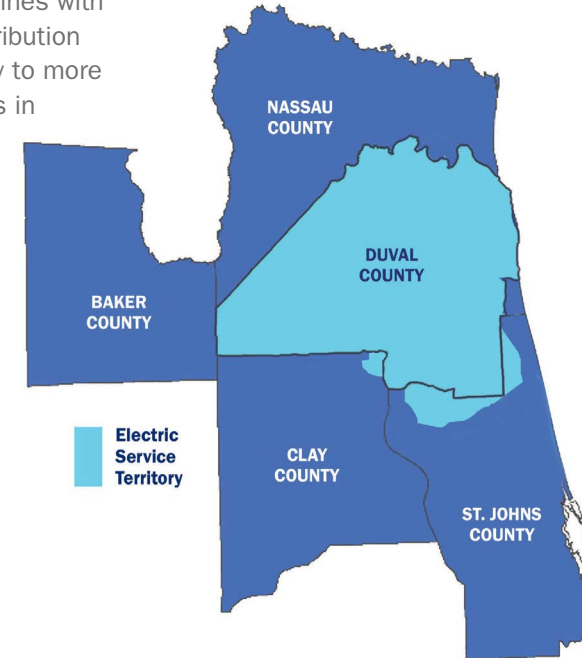
We treat others with courtesy and respect, seeking diverse perspectives and helping to bring out the best in everyone.

### INTEGRITY

We place the highest standard on ethics and personal responsibility, worthy of the trust our customers and colleagues place on us.

## Our Service Territory

JEA owns more than 744 miles of electric transmission lines with over 7,200 miles of distribution lines, providing electricity to more than 500,000 customers in Northeastern Florida. JEA's water/wastewater system is one of the largest and most complex in the country with more than 9,000 miles of water and wastewater pipes, 38 water treatment plants and over 1,500 pump stations.



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Because JEA is continually striving to provide our customers with high quality electric service, we are initiating this IRP now to outline the necessary actions to enable us to continue providing electricity in optimal ways in the future.  
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## Our Workforce

JEA's 2000-person workforce includes many highly technical, highly trained individuals. As one of the largest community-owned utilities in the nation, we offer our employees well-paying, professionally rewarding career opportunities.

General Admin/  
Management 31%

Professional 18%

Skilled and  
Semi-skilled  
Craft and  
Technician 51%





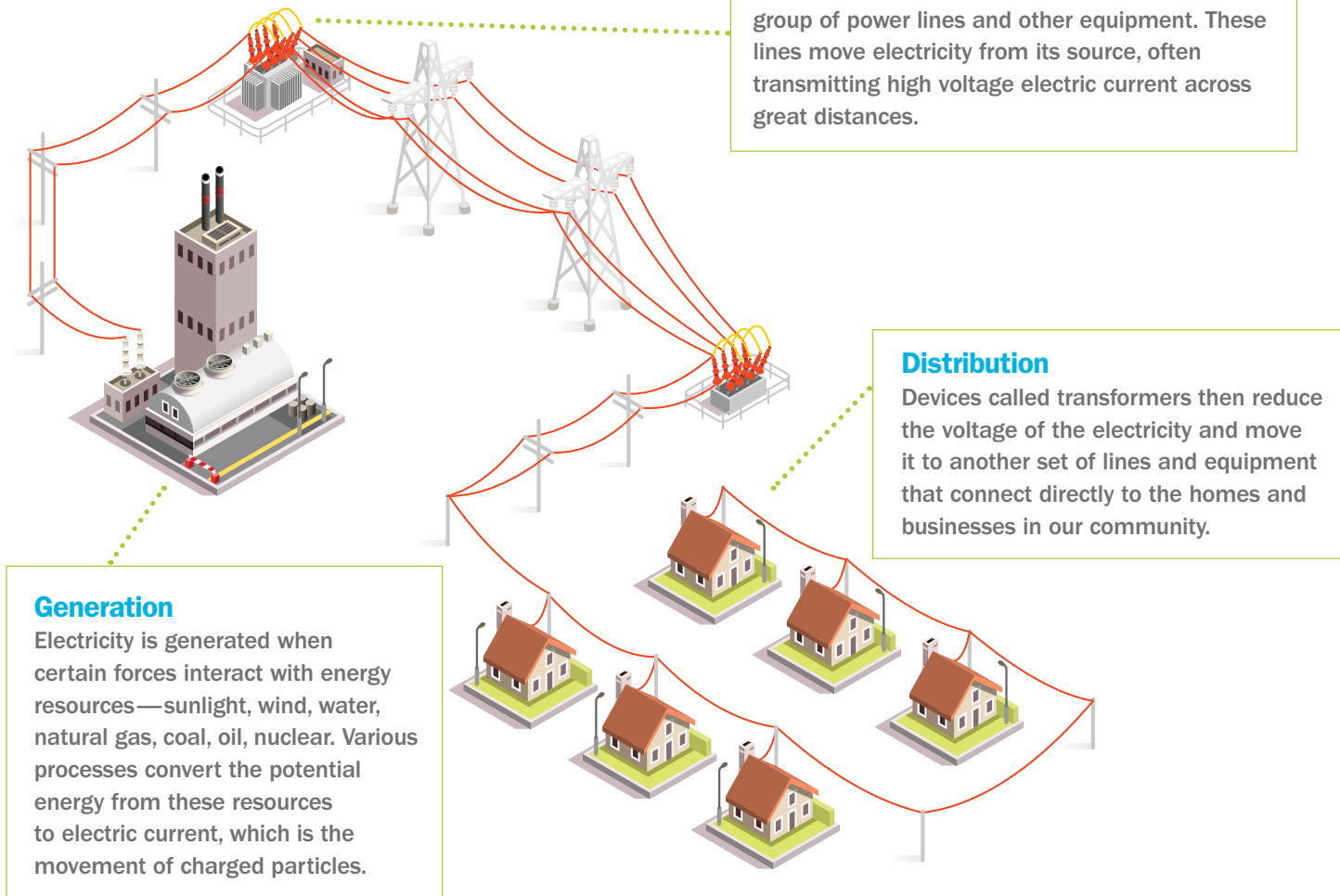
# JEA's Electric System

## Our Electric Generation Strategy

JEA is proud of its Electric System and its reputation as one of the nation's exemplary municipal service providers. Our existing generation capacity is over 3,100 MWs and our generation fleet contains a diverse resource mix that includes nearly two-thirds natural gas. The remaining generation comes from coal, petcoke and renewable sources such as solar and landfill gas.

JEA's diverse electric generation fleet allows us to fine-tune our generation strategy based on the price of different fuels. This agility helps keep prices lower for our customers. JEA owns and operates five electric generation facilities, including renewable energy sources. JEA is one of 35 utilities nationally and one of four in the state of Florida to receive the Diamond RP3 designation, from the American Public Power Association, for our electric reliability efforts.

## How Our Electric System Works



## JEA's Current Energy Initiatives

### Solar Energy

JEA has been leading the way for clean energy in Jacksonville since the 1990s when we installed solar panel arrays on dozens of schools and businesses. We are currently embarking on a major expansion that will add to our current solar energy offerings. Through the creation of an additional five local 50 MW solar farms, JEA will provide nearly 290 MW of solar power, making Jacksonville one of the leading solar cities in the nation.

### Electrification

Since 2014, JEA has been pursuing a strategy that capitalizes on commercial and industrial electrification opportunities. We expect electrification efforts to provide millions of dollars in savings to customers while improving JEA's system load factor. Additionally, these efforts introduce new, advanced, clean and efficient technologies that can leverage our business customers. JEA's electrification strategy is aimed at significantly reducing our environmental footprint to benefit our customers and community.



### Nuclear Purchase Agreements

Nuclear power is an alternative that will lower our overall carbon footprint. Nuclear energy provides almost 20 percent of the nation's electricity and is the number one source of emission-free electricity. Adding power from nuclear sources to our portfolio is part of a strategy to make JEA less dependent on fossil fuels. We plan to purchase 208 MW of power from Municipal Electric Authority of Georgia (MEAG) from a new nuclear facility to be constructed at Plant Vogtle and slated to be operational between 2022 and 2023. We will not own the facility, but plan to buy power from the Waynesboro, Georgia plant for 20 years.





# Introducing the Integrated Resource Plan (IRP)

Integrated Resource Plans are standard practice for utilities, typically looking across a span of 20-30 years. JEA is using this IRP to explore the future and anticipate how to best plan for generation, transmission and distribution service to our community.

With stakeholder engagement, the process considers factors affecting energy supply and demand from individual customer needs to utilization of existing assets and resources, advances in renewable energy technologies, governmental regulations and inclement weather events.

## Seven Step IRP Process



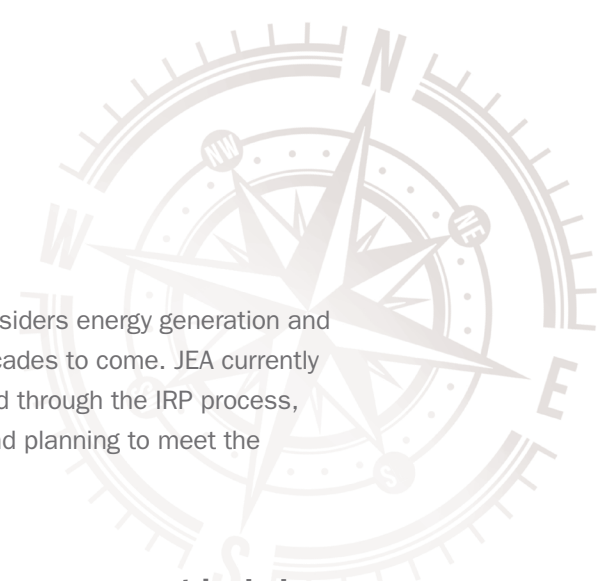
The IRP is a figurative compass that will help guide JEA's energy future. It considers energy generation and supply by balancing affordability, reliability, resilience and sustainability for decades to come. JEA currently relies on a diverse fuel mix. Our aspiration for the future, that will be evaluated through the IRP process, includes reducing our carbon footprint, additional renewable energy efforts, and planning to meet the reliability needs of our future population and service territory.

## Stakeholder Engagement

Engaging with a diverse cross-section of our community leaders is a critical piece of developing JEA's IRP. So much so, that in each of the seven steps outlined in the below graph, stakeholder feedback is garnered to ensure we are working collaboratively. Stakeholders will include residential and commercial customers, community partners, environmental voices, neighborhood associations, and municipal representatives.

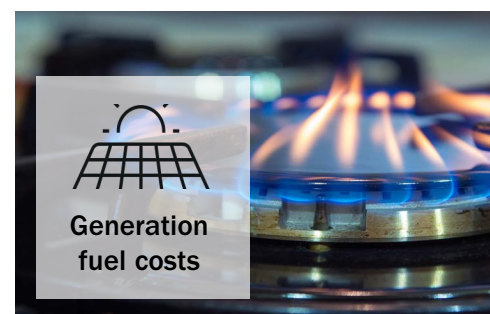
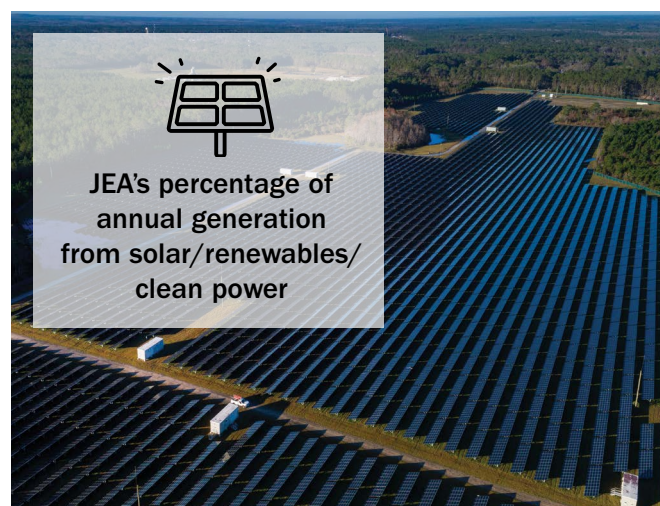
## Stakeholder engagement includes:

- **Educating** stakeholders about how JEA operates the electric system
- **Improving transparency** of utility decision making process for resource planning
- **Creating opportunity** to provide feedback on JEA's resource plan
- **Promoting dynamic and informed dialogue** around resource decisions
- **Encouraging stakeholders to share** what they learn with colleagues and other community members to garner their feedback





# Factors considered in IRP Development



## Specific Drivers Impacting the IRP

In developing strategic recommendations, the IRP assesses a combination of economics, system reliability, fuel diversity, and environmental considerations in an integrated manner and under a wide range of potential future external and internal factors. Specific drivers and factors for JEA that will be evaluated and considered in this IRP include:

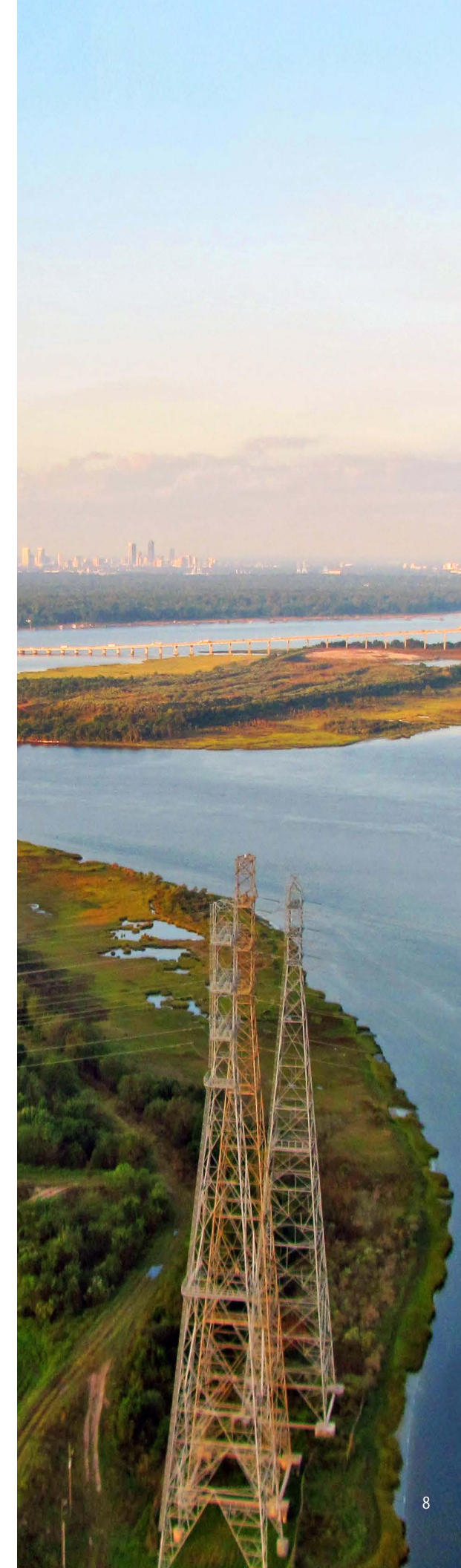
- Existing generating resources (including future retirement and replacement of aging units)
- Integration of additional solar energy
- Potential new supply-side resources (solar with and without battery storage, biomass, nuclear, hydrogen, natural gas)
- Demand-side management and energy efficiency
- Projected customer needs (“Load Forecast”), including potential impact of increased electrification, customer-sited generation (i.e. distributed energy resources)
- Potential legislation and/or regulatory mandates on emissions of carbon dioxide
- Electric vehicle adoption
- Increased utilization of renewable/clean energy resources
- Projected prices of natural gas and solid fuel

## Strategic Recommendations and Outcomes

The IRP will provide strategic recommendations for JEA to consider over the near-term to long-term to continue to provide reliable power in an environmentally responsible and cost-effective manner.

Development of an IRP is a data-intensive process, requiring the following types of information:

- Load and fuel price projections
- Characteristics of JEA's existing generating resources (owned generating units as well as purchase power)
- Consideration of JEA's electric transmission system
- JEA's Demand Side Management and Energy Efficiency portfolio
- Community viewpoints
- Land-use considerations
- Environmental stewardship
- Cost and performance estimates for new generating resources
  - Utility-scale solar photovoltaic (“PV”), with and without battery storage
  - Biomass
  - Nuclear
  - Hydrogen
  - Natural gas (simple and combined cycle configurations)





# Industry Trends

## Renewable Energy

The growth of renewable energy is undeniable. In fact, the U.S. Energy Information Administration (EIA) reported that in 2020, renewable energy sources—wind, solar, hydroelectric, biomass and geothermal—generated a record 834 billion kilowatt hours (kWh) of electricity, or roughly one-fifth of all electricity produced in the U.S. Use of U.S. renewable energy—led by wind, along with the increasing growth of solar—reached record highs over the first half of 2021. A U.S. Department of Energy study recently found that solar energy has the potential to account for 40 percent of the nation's electricity by 2035, powering all U.S. homes while driving deep decarbonization of the grid. Federal estimates predict that wind and solar will provide three-quarters of U.S. electricity by 2035 and 90 percent by midcentury. Utilities are striving to make their grids more flexible and resilient, adding battery storage and advanced inverters to accommodate the rapid growth of renewables.

## Decarbonization

In pursuit of a decarbonized electric grid by 2035, the Biden administration is encouraging the U.S. economy to lower its carbon intensity, especially when it comes to buildings, transportation and heavy industry. Two emerging technologies—"green hydrogen" and battery energy storage—can help propel the quest for alternatives to fossil fuels. Green hydrogen is produced when electricity from solar or wind or other carbon-free generation is used to power electrolyzers that separate the hydrogen and oxygen atoms in a water molecule. That hydrogen gas then can be stored in a tank or cavern before being funneled into a fuel cell to create clean, emissions-free electricity. It can also replace natural gas or be blended with it to cut the carbon footprint of gas appliances. Battery storage



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Over the next 25 years, utilities are going to see demand for electricity increase substantially—anywhere from 25 percent to 75 percent—depending on location.

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allows non-dispatchable resources like wind and solar energy to make energy that can be used precisely when systems need them most, helping balance load and generation across time and space. JEA's IRP process will examine tomorrow's energy mix that's virtually certain to be based on cleaner, greener options. We want to incorporate new strategic thinking, access to technology, proactive investments and aggressive planning.

## Electric Vehicles

More than a decade ago, Tesla opened the doors to public acceptance and mass market appeal of the electric car, laying the groundwork for electrification of passenger vehicles. Now, more and more auto manufacturers are announcing plans to stop production of combustion-engine vehicles within the next two decades. Recognizing the benefits of an electrified fleet, the commercial and industrial (C&I) sector—with its hundreds of thousands of medium and heavy-duty trucks, delivery vans and buses—is getting on board. As these medium- and heavy-duty EVs hit the streets, utility networks will have to handle simultaneous charging, corridor charging hubs and large charging depots. How can electric utilities manage the incredible demand growth on their networks if nearly all company and private vehicles are electric by 2040?

JEA wants to be prepared to support electrification in our region. Our IRP will consider the effect of location on EV adoption in private vehicles, and the related effect on charging infrastructure. Passenger EVs have a higher price tag and tend to concentrate in zip codes with higher incomes. Often, these residential areas do not align with the warehouse districts or distribution facilities where fleet vehicles—and associated charging infrastructure—are deployed. It's important to consider the feeders and substations that are needed to serve customers as EVs penetrate the market.

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Use of U.S. renewable energy—led by wind, along with the increasing growth of solar—reached record highs over the first half of 2021

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# JEA at a Glance

## Electric System

- 500,000 customers
- 900 square miles of electric service area
- Over 7,200 miles of distribution
- 744 circuit miles of transmission

## Electric Generation

- Northside Generating Station
- Brandy Branch
- Kennedy Station
- Greenland Energy Center

## Generation Technologies

- 2 circulating fluidized bed units
- 1 oil/gas-fired turbine-generator unit
- 4 diesel-fired combustion turbines
- 1 combined cycle unit
- 7 gas/diesel-fired combustion turbines
- 8 solar photovoltaic sites

## Electric Power Supply Mix

- Natural Gas 60 percent
- Coal 12 percent
- Petroleum Coke 12 percent
- Purchase Power 16 percent

Connect with us on



**Building Community**

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