



THE BIGGEST SOLAR INVESTMENT
IN THE VALLEY

502 MEGAWATTS
enough to power 83,000 homes each year



2021 Environmental Report
www.kub.org/environment



October 21, 2021

Purchased Power Adjustment (PPA) Amendment

Resolution 1446 (Second Reading)



TVA Pandemic Recovery Credits

- TVA Board approved \$220 million in Pandemic Recovery Credits for local power companies (LPCs) and TVA direct-served customers
- LPCs receive 2.5% credits on standard and non-standard service power costs
- Non-standard credits must be applied directly to large commercial and industrial customers' bills
- Standard service credits estimated to be \$7.3 million

Proposed Use of \$7.3 Million

- \$1.3 million available for customers with payment arrangements for past due bills
- \$6 million provided to all residential and standard business customers through lower rates
 - Average residential customer saves \$17 for 12 months
 - Offsets about 40% of initial electric rate increase
 - Mid-sized business customer saves \$260 for 12 months

Other Uses of \$6 Million Were Considered

- Home weatherization
 - KUB's Home Uplift funding limit of \$1.1 million included in approved budget and long-range plan
 - Over \$5 million in assistance available
- Utility bill assistance
 - Over \$25 million in assistance available over the next year
 - Federal grants, Project Help, KUB CURE (COVID Utility Relief Effort), and other sources

Significant Assistance Available for KUB Customers in 2021/22

Source of Funds	Description	Funds Available (\$)
Federal grants – Knox Housing Assistance Program	Payment of rent and/or utility bills (City and Knox County)	\$18,500,000
Federal grant – Low-Income Energy Assistance Program (LIHEAP)	Payment of electric and natural gas bills	\$ 6,000,000
Federal grant – Low-Income Water Assistance Program (LIHWAP)	Payment of water and wastewater bills	TBD
COVID Utility Relief Effort (CURE)	Payment of utility bills	\$ 265,000
Project Help	Payment of utility bills	\$ 306,000
TVA Pandemic Recovery Credits	Eliminate outstanding utility bill payment arrangements	\$ 1,300,000
Other sources (faith-based, social service agencies, etc.)	Payment of utility bills	\$ 1,100,000
Total		\$27,471,000

Utility Bill Assistance Awareness

- List sources of assistance on KUB website
 - Contact information
 - Provide links to websites
- Digital and radio ads
- Bill stuffers and e-mails to paperless billing customers
- Post cards/e-mails to customers with past due balances
- Postcards/information sheets to area agencies
 - Health Department
 - Senior/neighborhood centers
 - Section 8 Housing Managers
 - Churches and food pantries
 - Schools
 - SEED
 - United Way
 - Centro Hispano
 - YMCA and YWCA

Resolution 1446

- Amends Purchased Power Adjustment (PPA) to address use of standard service power cost credits

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Application and IT Systems Update



Connected Devices**Internet****Hosted or SaaS****Microsoft Office 365****Cloud Data Center****Employee and Customer Portals**Employee Portal
KUBapps

Customer Website

iOS & Android Mobile Apps

Fieldwork Mobile

GIS Viewers

Integrated Voice Services (IVR)

Kiosks

Integration Layer (business logic and translation)**Enterprise Applications**

	Customer Information System (CIS)	Geographic Information System (GIS)	Human Resource Information System (HRIS)	Financial Management Information System (FMS)	Distribution Management System (ADMS)	Work and Asset Management System (AMS)
Presentation Layer (Web Servers)						
Business Logic Layer (Application Servers)	<ul style="list-style-type: none"> Customer Accounts and SA's Inquires and Interactions Bill Calc & Print Payments New Services and Related Workflows 	<ul style="list-style-type: none"> Utility Distribution / Collection System Geographic Attributes Network Connectivity Parcels & Address Inspection and As-Built Portal 	<ul style="list-style-type: none"> Recruiting On Boarding Learning Payroll Benefits 	<ul style="list-style-type: none"> General Ledger Accounts Payable Cash Management Bank Management Budget & Planning Inventory Procurement 	<ul style="list-style-type: none"> Outage Management (trouble) Operations and Switching System State System Planning Analytics 	<ul style="list-style-type: none"> Work Management Planned Maintenance Distribution & Collection Assets Condition Based Monitoring Asset Status
Database Layer (DB Servers)						

Tier II Applications (examples)

ARC GIS Online

Engineering Modeling

Fuel/Fleet Management

Avaya Phone & Call Center Applications

Voice Radio System

Vegetation Management

Splunk Log Aggregation & Analytics

Device Mgmt Applications

Lab / Test Mgmt

Others

Enabling Applications and Services

Network and Communications

Data Storage (SAN)

Cybersecurity

Health and Performance Monitoring

Backup / Restore and DR Testing

Elasti-Search Location Serv Etc..

Load Balancing & VPN Gateway

Connected Devices



Internet



Hosted or SaaS



Microsoft Office 365



Cloud Data Center



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Presentation Layer (Web Servers)

Customer Information System (CIS)

- Customer Accounts and SA's
- Inquires and Interactions
- Bill Calc & Print
- Payments
- New Services and Related Workflow

Geographic Information System (GIS)

- Utility Distribution / Collection System
- Geographic Attributes
- Network Connectivity
- Parcels & Address
- Inspection and As-Built Portal

Human Resource Information System (HRIS)

- Recruiting
- On Boarding
- Learning
- Payroll
- Benefits

Financial Management Information System (FMS)

- General Ledger
- Accounts Payable
- Cash Management
- Bank Management
- Budget & Planning
- Inventory
- Procurement

Distribution Management System (ADMS)

- Outage Management (trouble)
- Operations and Switching
- System State
- System Planning Analytics

Work and Asset Management System (AMS)

- Work Management
- Planned Maintenance
- Distribution & Collection Assets
- Condition Based Monitoring
- Asset Status

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Load Balancing & VPN Gateway

Cutting Edge Corporate Network Helps KUB serve Customers Better

- Moving from 10GB to 100GB ring architecture
- Improved reliability and redundancy
- Benefiting from recent fiber deployments



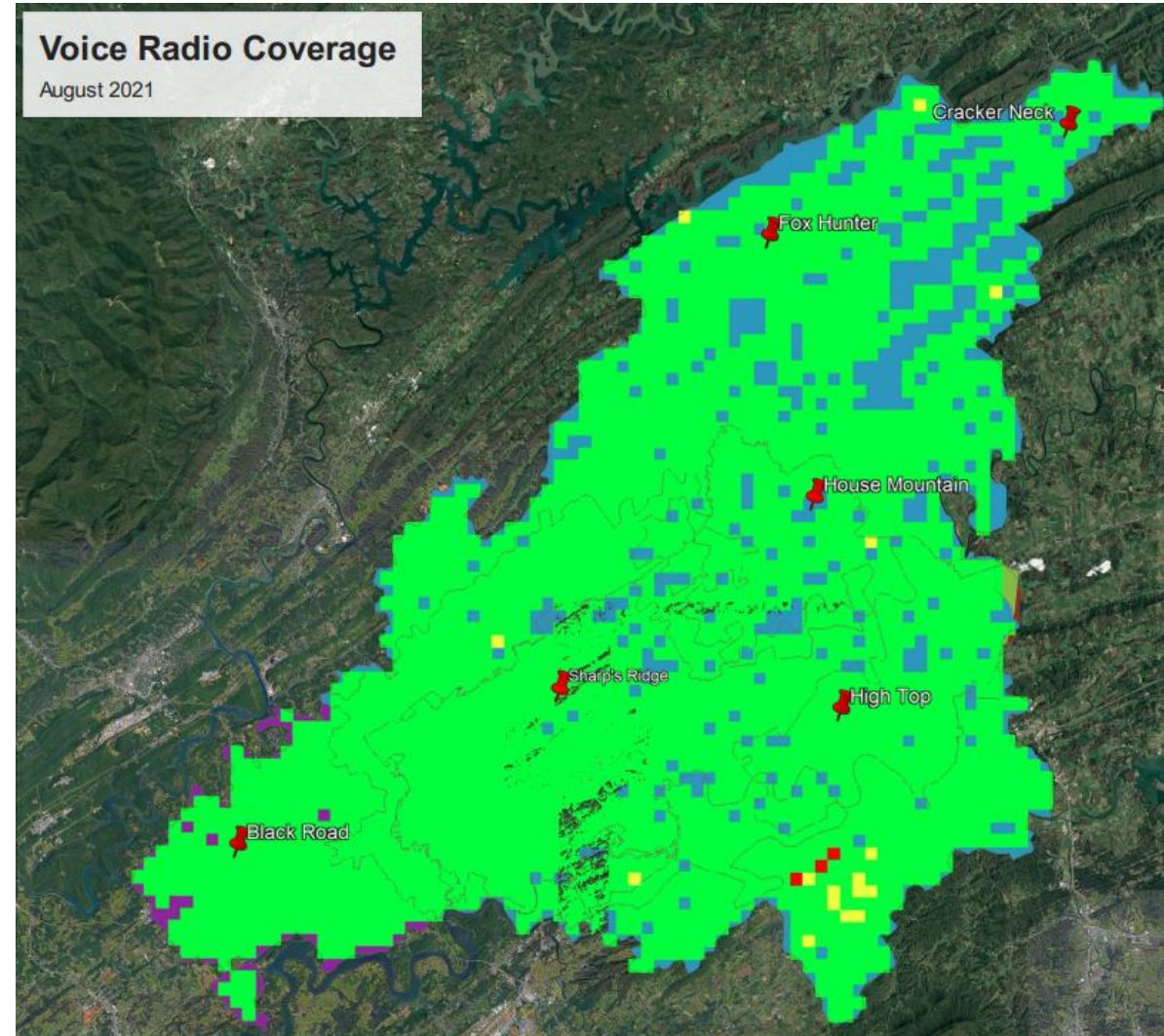
Firewall Upgrade: Keeping KUB Systems Secure

- Lifecycle replacement of hardware and software
- Allows for advanced management capabilities
- Supports increased throughput
- Offers redundancy for better performance and disaster recovery



Voice Radio System Critical to Safe Operations

- Installed, managed, and maintained private radio network
- Upgrading to improve coverage, voice quality, and redundancy
- Important for employee safety and operational communication



Asset Management System: Record of All Utility Assets

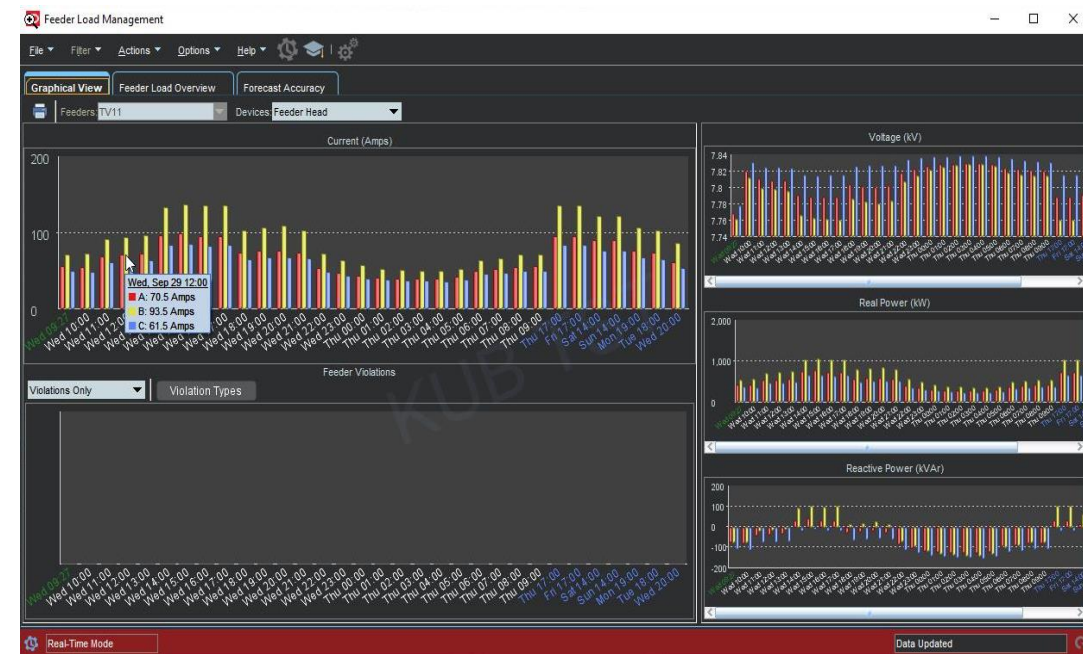
- Enables engineering, operations, maintenance, accounting to account for all assets
- Upgrade to extend the life of the system an additional 6+ years
- Targeting winter to make the necessary improvements

The screenshot displays the 'Assets' management software interface. At the top, there is a search bar with 'Find:' and 'Select Action' options. Below this is a navigation menu with tabs for 'List', 'Asset', 'Spare Parts', 'Safety', 'Meters', 'Specifications', 'Features', 'Work', 'Work Zones', 'Service Address', and 'Map'. The main area shows a map of a residential street grid with utility assets overlaid. A specific asset, 'W-HYDRANT, 1073, Normal, KUB, CLOW', is selected, and an 'Identify' pop-up window is open over it. This window contains the text 'W Hydrant: 1073' and several action buttons: 'Add to Results', 'Set as Current', 'View Work Details', 'Asset Drilldown', 'Enter Meter Readings', 'Report Downtime', 'View Asset Details', 'View Work Details', and 'Learn more about this feature...'. Below the map, there is a 'Work' section with a table of work orders. The table has columns for 'Record', 'Class', 'Status', 'Reported Date', 'Target Start Date', 'Description', 'Priority', 'History?', and 'Is Task?'. The table contains five rows of work orders related to hydrant surveys and repairs.

Record	Class	Status	Reported Date	Target Start Date	Description	Priority	History?	Is Task?	
<input type="checkbox"/>	W21-354338	WORKORDER	WSCH	10/14/21 11:18 AM	10/14/21 12:00 AM	Water Fire Hydrant - YR1 Annual Survey (MCN07 Oglewood)	3	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	W18-95735	WORKORDER	CLOSE	3/12/18 9:29 AM	4/1/18 12:00 AM	Water Fire Hydrant - YR1 Annual Survey (Subarea 1H-North) - UGC	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	W18-56455	WORKORDER	CLOSE	2/8/18 1:42 PM		Flagmen Services, 2.0, 1.5, NO	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	W18-56136	WORKORDER	CLOSE	2/8/18 10:08 AM		Water Fire Hydrant Repair - UGC 2102 harvey st	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	W15-306490	WORKORDER	CLOSE	7/7/15 8:48 AM	7/7/15 12:00 AM	Water Fire Hydrant - YR1 Annual Survey (Subarea 1H) - UGC	3	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Distribution Management System Enhancements Support Grid Modernization

- Outage management functionality deployed July 2020
- Current focus on distribution management functionality
 - Power flow and modeling
 - Feeder load management
 - Fault location analysis



Mobile Fieldwork System Supports KUB Field Staff

- One mobile – regardless of system generating request
- Focus on work and safety – not technology
- Takes advantage of mobile device capability
- Responsive and modular
- Developed in-house



Enhanced Outage Notifications Coming Soon

- Improves overall customer satisfaction
- Increase customer confidence and knowledge of the electric system restoration process
- Provides close to real time updates
- Saves customer time and reduces caller wait times/call volume during outage events

Initial

We are aware of an outage in your area that may be impacting [Premise Address] affecting [Cust Count] customers. We are working to restore power as soon as possible. Based on experience with similar events, KUB estimated restoration on [Date] by [Time].

Update

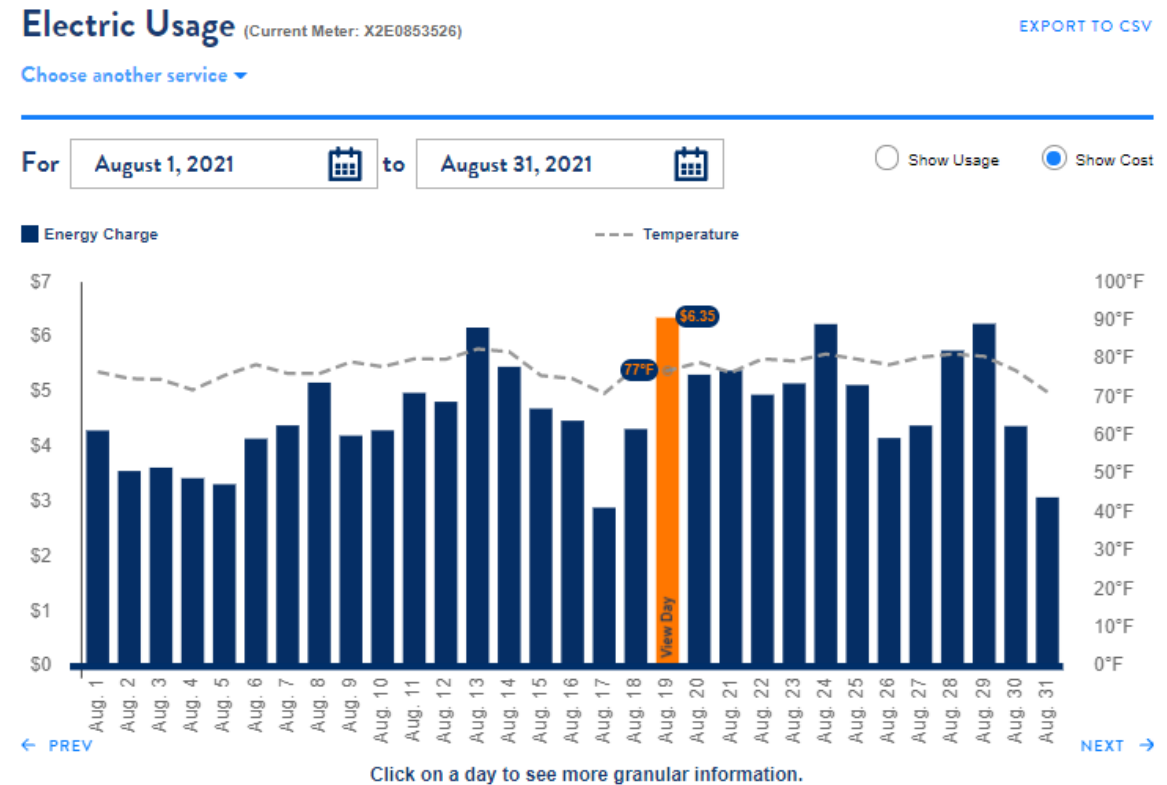
We have updated the estimated restoration time to [Date] by [Time] for the outage that may be impacting [Premise Address].

Closed

Crews have completed work to restore electric service at [Premise Address]. Please visit www.kub.org/outage-center if you are still experiencing an outage. Thank you for your patience.

Customer Portal 2.0 is Now Live

- Better control of content and system performance
- Updated interactive charts now available on kub.org and KUB mobile app
- Track utility usage by day/hour
- Receive proactive alerts



Preparing for Next Generation of Customer Service Technology

- Legacy CIS will be 20-years old
- Not designed to meet current customer expectations
- Planning for a new Customer Relationship Management (CRM)
- Year of preparation before starting the project



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Materials & Supply Chain Update



Widespread Supply Chain Issues

- Raw material shortages (metals, plastics, resins)
- Labor shortages
- Freight and shipping (container shortage, port congestion, etc.)
- High demand across many sectors
- Price escalation and volatility
- Energy costs (retail gas prices, crude oil prices, low inventories)

Causes

- Pandemic impacts to production and labor
- World events (Texas storms, flooding in China and Europe, etc.)
- Rapid economic recovery
- Panic buying and stockpiling of materials
- Pandemic resurgence

KUB Impacts

- Material shortages
- Price increases
- Unfavorable bidding environment
- Delayed or deferred work
- Volatility

Our Mitigation Efforts

- Enhanced communication and reporting
- Categorization and prioritization of materials and supplies
- Planning and prioritization of work
- Alternate sourcing, substitutions, work-arounds
- Increased flexibility with vendors and suppliers

Moving Forward

- Continue mitigation efforts
- Project and work deferrals when necessary
- Strategic purchasing
- Potential budget impacts

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