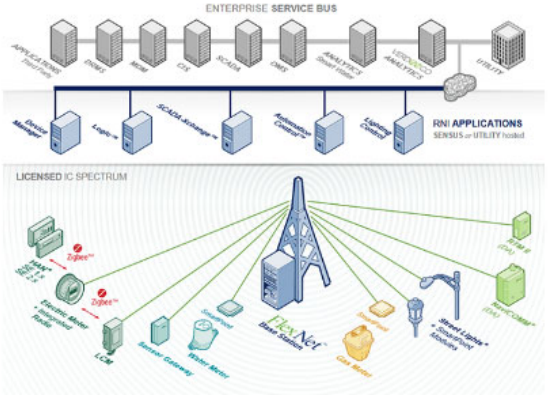
New Smyrna Beach
UTILITIES



Advanced Metering Infrastructure (AMI)

Smart Grid System

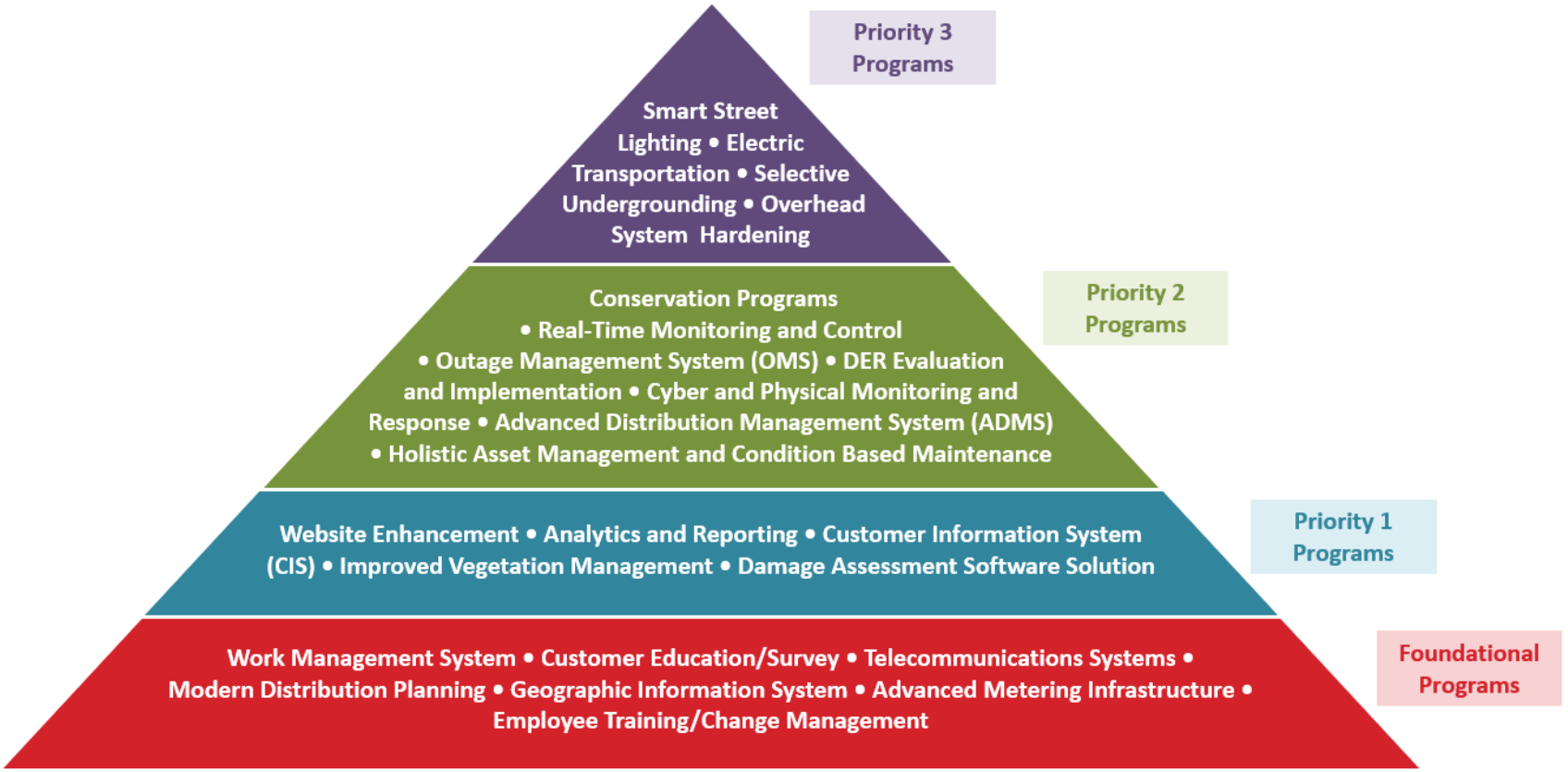
Executive Summary & Recommendation

John McMurray Director – Strategic Programs
Quanta Technology Jesus Gonzalez, Robert Dumas and Julio Romero-Aguero

June 26, 2023

Grid Modernization Priorities

New Smyrna Beach UTILITIES



Relative Benefit Analysis

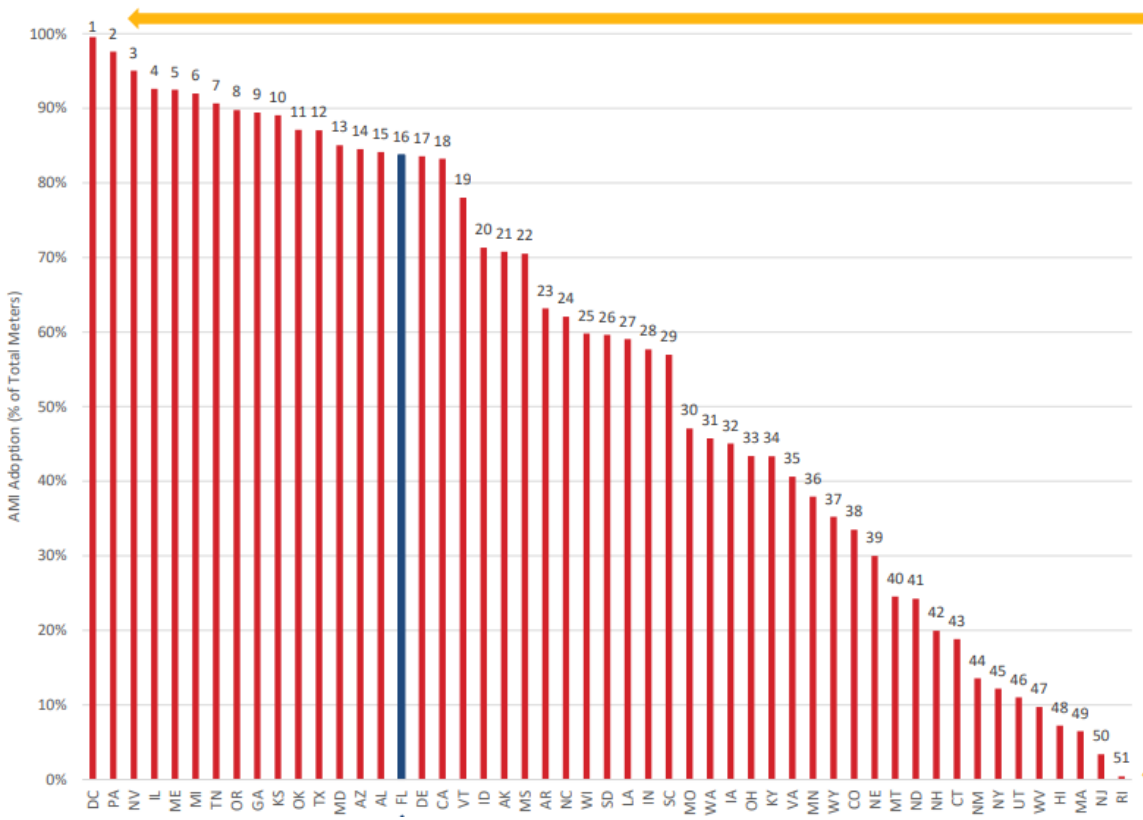
New Smyrna Beach UTILITIES

Program Number	Program	Relative Benefit							Benefit Summary	Benefit Summary Numerical
		Customer Engagement	Advanced Operations	Resiliency & Reliability	Innovation	Efficiency Improvement	Cost Efficiency	Conservation & Sustainability		
1	Advanced Metering Infrastructure	Very High	Very High	Very High	High	Very High	Very High	High	High	3.91
2	Customer Information System	Medium	High	Low	Low	High	Very High	Medium	Medium	2.15
3	Work Management System	Medium	High	Medium	Medium	Medium	Very Low	Very Low	Low	1.76
4	Website Enhancement	Very High	Medium	Low	Medium	Medium	Medium	Medium	Medium	2.18
5	Telecommunication Systems	Medium	Very High	Very High	Medium	Very High	Very High	Medium	High	3.33
6	Analytics & Reporting	Very High	Medium	Very High	Very High	High	Very High	High	High	3.58
7	Smart Street Lighting	Medium	Low	Very Low	High	Very High	High	High	Low	1.73
8	Customer Education/Survey	Very High	Low	Very Low	Very Low	Low	Medium	Very High	Low	1.70
9	Geographic Information System (GIS)	High	High	High	Medium	High	High	Medium	Medium	2.91
10	Real-Time Monitoring and Control	Medium	Very High	Very High	High	High	High	Very High	High	3.24
11	Outage Management System (OMS)	Very High	Very High	Very High	Medium	High	Very High	Low	High	3.64
12	Advanced Distribution Management System (ADMS)	High	Very High	Very High	High	High	Medium	High	High	3.30
13	Damage Assessment Software Solution	Medium	Medium	High	High	Medium	Medium	Very Low	Medium	2.21
14	Modern Distribution Planning	Medium	Medium	High	High	Medium	High	High	Medium	2.52
15	Overhead System Hardening	Very Low	Very Low	Very High	Low	Medium	Low	Very Low	Low	1.61
16	Selective Undergrounding	Very Low	Very Low	Very High	Low	Medium	Low	Very Low	Low	1.61
17	Improved Vegetation Management	Medium	Very Low	Very High	High	Medium	High	Low	Medium	2.45
18	Holistic Asset Mgmt. & Condition-Based Maint.	Medium	Medium	High	High	Very High	Very High	High	Medium	2.88
19	DER Evaluation and Implementation	Medium	Low	Medium	High	Low	Medium	Very High	Low	1.91
20	Cyber and Physical Monitoring and Response	Medium	High	Very High	Medium	Low	Very Low	Low	Medium	2.30
21	Electric Transportation	Medium	Low	Very Low	High	Low	Medium	High	Low	1.24
22	Employee Training/Change Management	Low	High	High	Medium	Very High	High	Low	Medium	2.48
23	Conservation Programs	Medium	Low	Low	Low	High	Medium	Very High	Low	1.79

BENEFIT SUMMARY LEGEND	
Very High	= 4
High	>= 3 and < 4
Medium	>= 2 and < 3
Low	>= 1 and < 2
Very Low	< 1

WEIGHTS	
Customer Engagement	8
Advanced Operations	4
Resiliency & Reliability	10
Innovation	1
Efficiency Improvement	4
Cost Efficiency	4
Conservation And Sustainability	2

AMI - Metering Technology in US

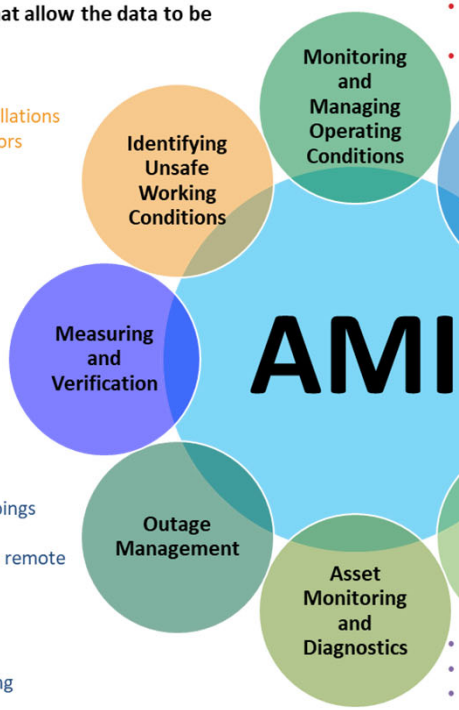


- AMI is the most popular metering technology in the U.S.
- As of 2020 there were 103.1 million AMI meters, out of 159.7 million meters
- Total penetration rate was about 64.5%
- Florida was ranked 16 (83.7% penetration) among all states and DC

AMI Foundational to Grid Modernization

New Smyrna Beach ••• UTILITIES •••

AMI can provide significant additional benefits beyond those related to automated meter reading and billing. These benefits or use cases cannot be achieved by merely installing the network and meters. Many will require integration with ADMS or other software solutions that allow the data to be analyzed, visualized and paired with other data.



- Improved power quality
- Validation of voltage compliance
- Visualizing the data/Increased system visibility
- Volt/Var optimization (VVO) and conservation voltage reduction (CVR)
- Switching analysis

- Load forecasting and projected growth
- Equipment investments and upgrades (e.g., distribution transformers, substation transformers, etc.)
- Line loss studies
- Circuit phase load balancing

- Validation of primary circuit model
- GIS and network connectivity corrections
- Mater to transformer mapping/transformer load management
- Phase identification and mapping

- Identifying unregistered customer-owned systems
- Understanding the impacts of customer-owned systems
- Determining DER capacity
- Informing policy

- Proactive maintenance
- Identifying over and underloaded transformers
- Identifying bad distribution voltage regulators and distribution capacitors
- Identifying hot sockets

- Verifying outages through meter pings
- Estimating restoration times
- Service order automation through remote connect/disconnect
- Identifying outage locations
- Determining cause of outage
- Customer communications
- Determine fire-caused outage using temperature data
- Identifying which phase of wires are down

- Reduce/eliminate estimated reads
- Revenue protection
- Reliability metrics
- Demand response verification/thermostat programs
- Demand response and load shifting for EV charging
- Enables new rate options (e.g., time of use and prepay)

- Identifying unregistered PV installations
- Identifying downed live conductors

Source: Voices of Experience, Leveraging AMI Networks and Data, U.S. DOE

High Level Budgetary Estimates - 2020 Presentation

New Smyrna Beach ••• UTILITIES •••

Priority	Program Number	Program Name	dollars in thousands	Year 1		Year 2		Year 3		Year 4		Year 5		Total Year 1 - 5	
				Capital	O&M	Capital	O&M	Capital	O&M	Capital	O&M	Capital	O&M	Capital	O&M
F1	8	Customer Education/Survey		100	-	100	-	-	-	-	-	-	-	200	-
F2	22	Employee Training/Change Management		-	TBD	-	TBD	-	TBD	-	TBD	-	TBD	-	TBD
F3	14	Modern Distribution Planning		103	-	114	154	-	154	-	154	-	154	217	616
F4	5	Telecommunication Systems		100	-	175	23	175	23	-	23	-	23	450	90
F5	9	Geographic Information System		100	120	-	20	-	20	-	20	-	20	100	200
F6	1	Advanced Metering Infrastructure		5,600	-	11,200	800	-	800	-	800	-	800	16,800	3,200
F7	3	Work Management System		-	-	800	-	-	40	-	40	-	40	800	120
NF8	2	Customer Information System		-	-	-	-	-	-	-	-	-	-	-	-
NF9	13	Damage Assessment Software Solution		10	-	-	-	-	-	-	-	-	-	10	-
NF10	4	Website Enhancement		50	-	50	5	-	5	-	5	-	5	100	20
NF11	6	Analytics & Reporting		-	-	60	6		6	-	6	-	6	60	24
NF12	17	Improved Vegetation Management		-	220	-	110	-	110	-	110	-	110	-	660
NF13	11	Outage Management System		-	-	-	-	88	25	88	25		25	176	75
NF14	23	Conservation Programs		-	-	165	-	165	17	-	33	-	33	330	83
NF15	18	Holistic Asset Mgmt & Condition Based M		-	-	250	200	250	25	-	25	-	25	500	275
NF16	12	Advanced Distribution Management Syst		-	-	-	-	750	-	750	-	1,415	270	2,915	270
NF17	10	Real-Time Monitoring and Control		-	-	-	-	683	7	683	14	683	21	2,049	42
NF18	19	DER Evaluation and Implementation		-	-	-	-	-	260	-	-	-	-	-	260
NF19	20	Cyber and Physical Monitoring and Respo		-	-	100	-	200	125	200	125	-	-	500	250
NF20	7	Smart Street Lighting		-	-	-	-	200	-	200	-	-	-	400	-
NF21	21	Electric Transportation		-	-	-	-	-	-	-	-	156	-	156	-
NF22	15	Overhead System Hardening		-	-	-	-	-	-	TBD	-	TBD	-	TBD	TBD
NF23	16	Selective Undergrounding		-	-	-	-	-	-	TBD	-	TBD	TBD	TBD	TBD
		Total		$ 6,063	$ 340	$ 13,014	$ 1,318	$ 2,511	$ 1,616	$ 1,921	$ 1,380	$ 2,254	$ 1,532	$ 25,763	$ 6,185

Note that costs for Employee Training/Change Management, Overhead System Hardening, and Selective Undergrounding are TBD and not included in totals

FX indicates priority of Foundational Program; NFX indicates priority of Non-Foundational Program

Foundational

Priority 1

Priority 2

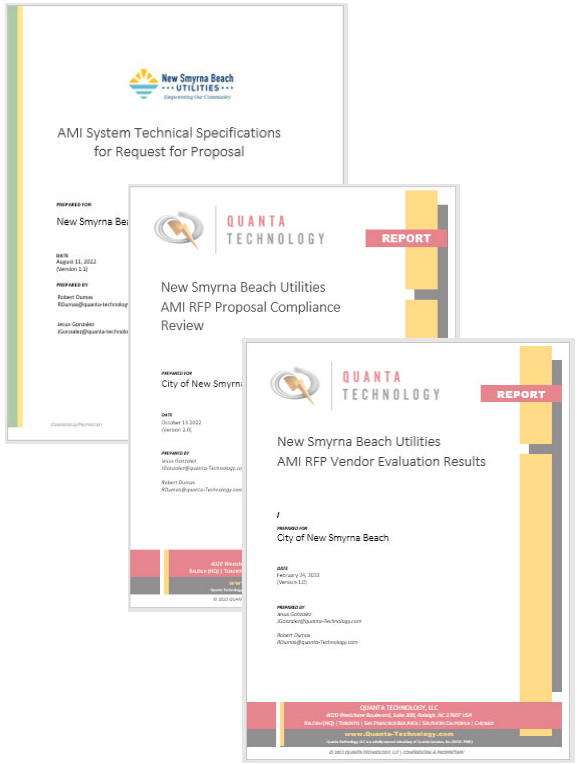
Priority 3

AMI Estimate

- Includes full elec. & water deployment
- Includes 5 years of managed services (SaaS)

Comprehensive Selection Approach

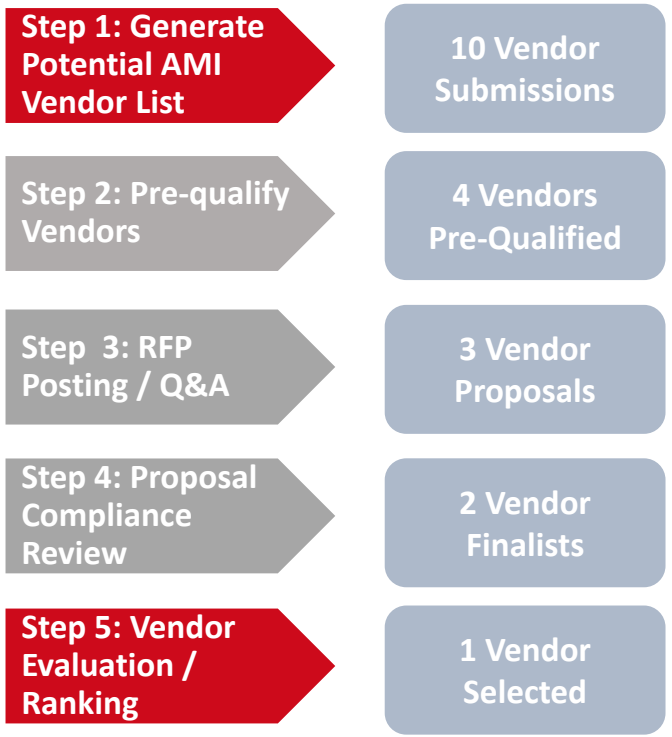
- Collaborative approach with NSBU and Quanta teams
- RFP Technical Specification with over 400 system requirements across a broad range of areas covering technical, services, and contractual aspects
- Proposal compliance review based on AMI deployment experience
  - Technology owner with sole responsibility for a turnkey solution
  - Managed services & training provided by technology owner
  - Use of system test fixture for full system integration testing prior to field deployment
- Vendor vetting
  - Technology presentations including product demonstrations
  - Extensive Q/A and virtual customer reference visits for finalists
- Vendor ranking and evaluation using objective tool with priority weighting
- Quanta analysis throughout process
  - Pre-Qualification Evaluation
  - Compliance Review
  - Pricing Analysis
  - Vendor Ranking results and observations



Vendor/Proposal Selection Process

New Smyrna Beach UTILITIES

- Step 1: AMI Pre-Qualification questionnaire sent to 10 vendors for consideration
- Step 2: Four vendors were selected that met pre-qualification criteria (Aclara, Anixter-Wesco (Itron), L&G, Sensus)
- Step 3: RFP was posted with procurement, solution, and contractual requirements
  - L&G retracted submission
  - Aclara, Anixter-Wesco (Itron), and Sensus submitted proposals
- Step 4: Proposal were analyzed against key compliance requirements
  - Anixter-Wesco (Itron) was found non-compliant primarily due to lack of primary signatory by the technology owner (Itron)
- Step 5: Compliant vendor proposals (Aclara, Sensus) were evaluated by NSBU evaluation team
  - Eval team: John McMurray (Lead), Efren Chavez, Julie Couillard, Joseph Bunch
  - Conducted vendor Q/A and virtual customer reference visits
  - Quanta provided pricing summary, evaluation analysis and observations
  - NSBU team made final selection
- Sensus was chosen as the AMI Solution Provider



Evaluation Results

- Evaluation team unanimously chose Sensus by a strong delta point basis
- Key Observations:
  - Sensus provided the most comprehensive and detailed response that aligned with NSBU needs
  - Sensus' attention to detail during Q/A and due diligence throughout the selection process was superior to all other vendors
  - Sensus' technology solution best met NSBU requirements particularly in the area of distribution automation where they have proven, scaled, field deployments and references
  - Aclara's pricing was lower particularly in Managed Services
  - Sensus represents acceptable risk tolerance to NSBU given:
    - Sensus leadership in FL municipal market particularly for utilities with similar size
    - NSBU first-hand prior experience with Sensus systems
    - Sensus and Anixter-Wesco (Itron) original full deployment pricing was comparable

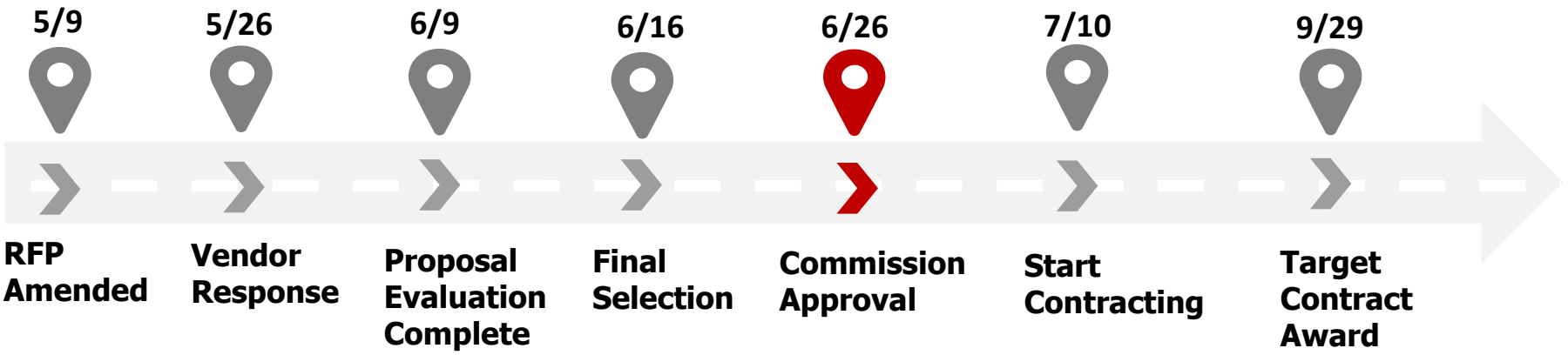
Reviewer	Category	Description	Aclara Importance Weighted Rating	Sensus Importance Weighted Rating	Delta Aclara - Sensus
Reviewer #1	Technical	Category Score	30.90%	42.53%	-11.63
	Pricing	Category Score	5.97%	13.59%	-7.62
	Commercial	Category Score	11.81%	26.34%	-14.53
	Overall	Reviewer Overall Score	48.68%	82.47%	-33.78
Reviewer #2	Technical	Category Score	14.87%	39.40%	-24.53
	Pricing	Category Score	4.82%	15.06%	-10.25
	Commercial	Category Score	3.84%	19.24%	-15.39
	Overall	Reviewer Overall Score	23.53%	73.70%	-50.17
Reviewer #3	Technical	Category Score	19.09%	36.64%	-17.56
	Pricing	Category Score	5.31%	2.74%	2.57
	Commercial	Category Score	5.40%	17.90%	-12.50
	Overall	Reviewer Overall Score	29.79%	57.27%	-27.48
		Average of All Reviewers	34%	71%	

Pricing (Full Electric, Water Limited)

- NSBU Opting for a full Electric AMI deployment supplemented with a Water limited deployment
  - System will be fully capable of supporting a full water deployment in terms of network and system bandwidth/integrations/functionality
- Water meters / installation significantly more costly than electric
  - NSBU team desires further evaluation of cost-benefit scenarios and deployment options
- NSBU team opting for both Software AND Network as a Service
  - NSBU will only manage the metering endpoints
  - Vendor manages the head-end and network infrastructure
- Will work to reduce Manage Services pricing particularly for NaaS during contracting

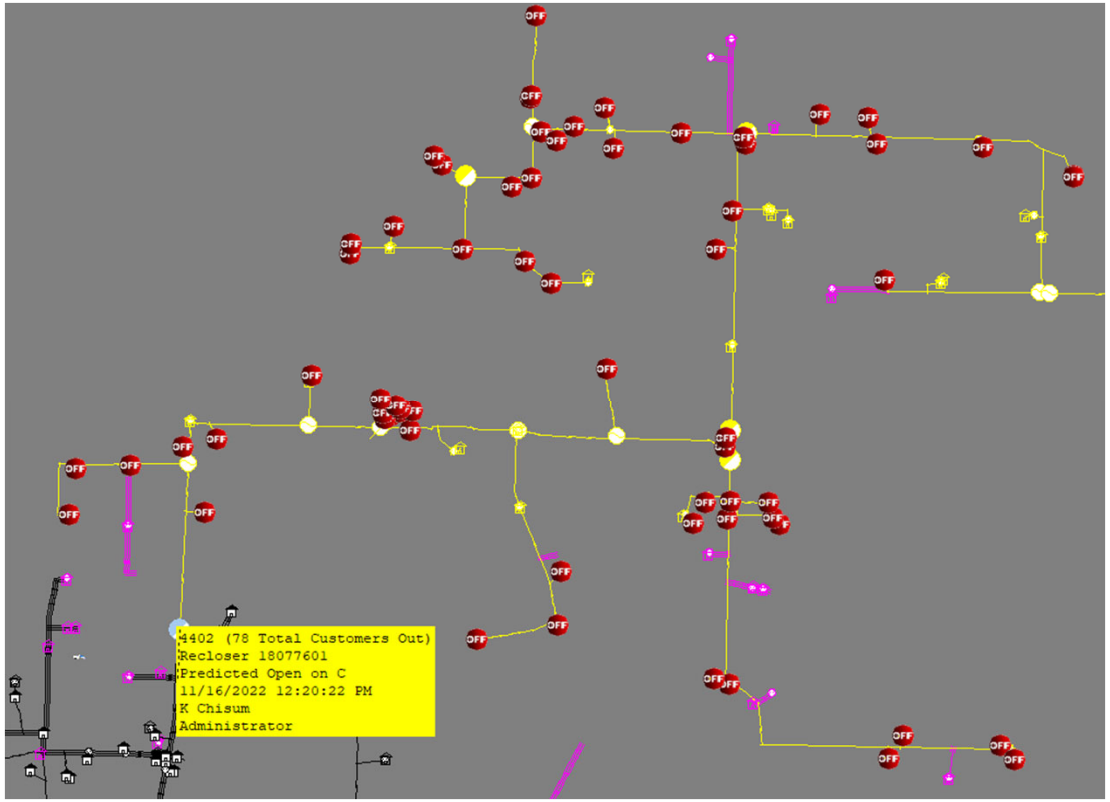
Category	Sensus	Aclara
Solution Pricing (One-Time)	$6.1M	$5.6M
Managed Services (SaaS+NaaS) (Recurring – 10 yr)	$6.8M	$1.9M
Total	**$12.9M**	**$7.5M**

AMI Timeline (Recent Events)

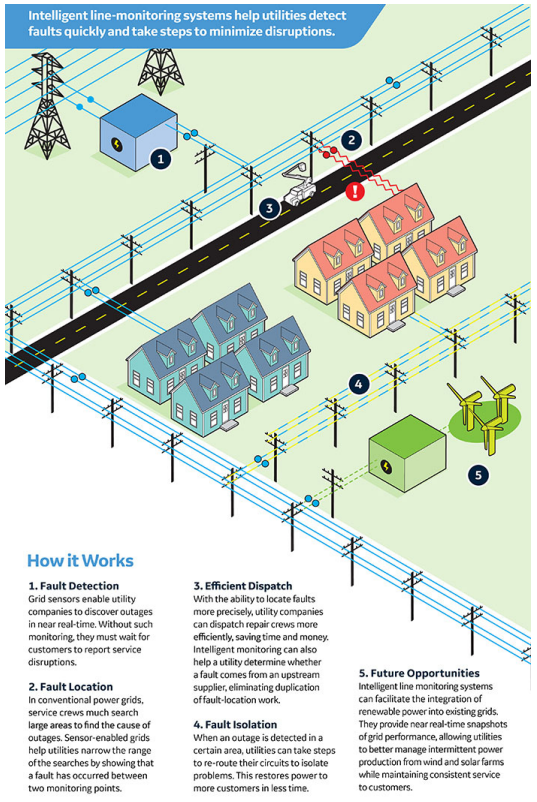


- Anticipate Contract Award by end of 3Q2023
- Initial project startup in 4Q2023

AMI – Grid Functionality



Outage Management System with De-energized AMI Meters



Primary grid sensory network (Source: GE)

Beyond Advanced Meter Functionality

New Smyrna Beach ··· UTILITIES ···

- Distribution Automation (DA), Advanced Grid sensors, Real-time equipment monitoring, and control and Data Analytics capabilities
- Sensus established AMI & Smart Grid innovator
- Fault Location Isolation Service Restoration (FLISR)
- Advanced analytical tools and operational monitoring
- Foundational to success of the Modernization Roadmap programs
- Enables many "Utility of the Future" operational capabilities and Customer Experience enhancing services consistent with our Vision, but not possible with legacy system

Per outage event, FLISR operations:[2]

Reduced number of customers interrupted by 55%

Reduced customer minutes of interruption by 53%

In 2013, 3 utilities reported System Average Interruption Frequency Index (**SAIFI) improvements of 17%-58%** from pre-deployment baselines

DA operations **avoided >197,000 truck rolls**[3] and **3.4 million vehicle miles traveled** from 2011 to 2015[4]

Source: US Department of Energy, Distribution Automation: Results from the Smart Grid Investment Grant Program, 2013 https://www.energy.gov/sites/prod/files/2016/11/f34/Distribution%20Automation%20Summary%20Report_09-29-16.pdf

Vendor Components

Advanced Meter Infrastructure (AMI)

- AMI electric and water* meter supplier
- Meter communication network infrastructure
- Head-end System (HES) to manage the communication network and collect meter data

Meter Data Management System (MDMS-Lite)*

- Vendor provided MDMS capabilities as part of solution
- System of record for all meter and other system data
- Collects and converts raw meter data into meaningful information for other systems
- Collects, processes, and sends billing determinants
- Synchronizes AMI data with the Customer Information System (CIS) and the Outage Management System (OMS)
- Collects and analyzes meter events and alarms

System Integration (SI)

- Configure and build the system integrations between the AMI HES, MDMS, CIS and the OMS

Meter Installation Vendor (MIV)

- Operates as a subcontractor to the Vendor (managed by Vendor)
- Manages the warehousing and installation of the AMI meters
- Delivers installation data to NSBU's systems through their own Work Order Management System
- Provides customer service/call center for installation appointments
- Maintains overall project tracking and communicates status at intervals

Electric Grid Innovation

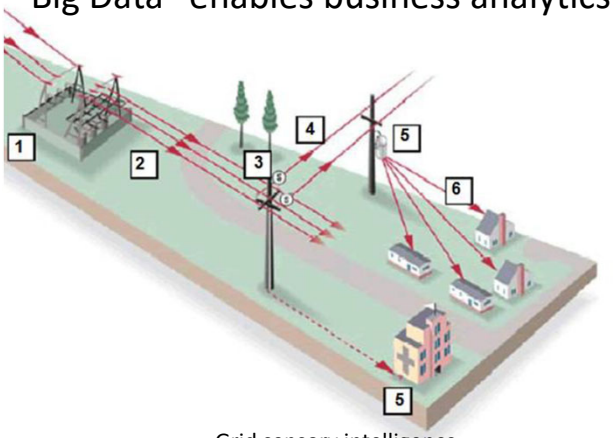
New Smyrna Beach UTILITIES

- Improve grid reliability
  - We will know customers are out of power before they call and verified restoration
  - Ping meters inside nested outages
  - Understand grid health from fringe meters
  - Remote disconnect/reconnect of meters

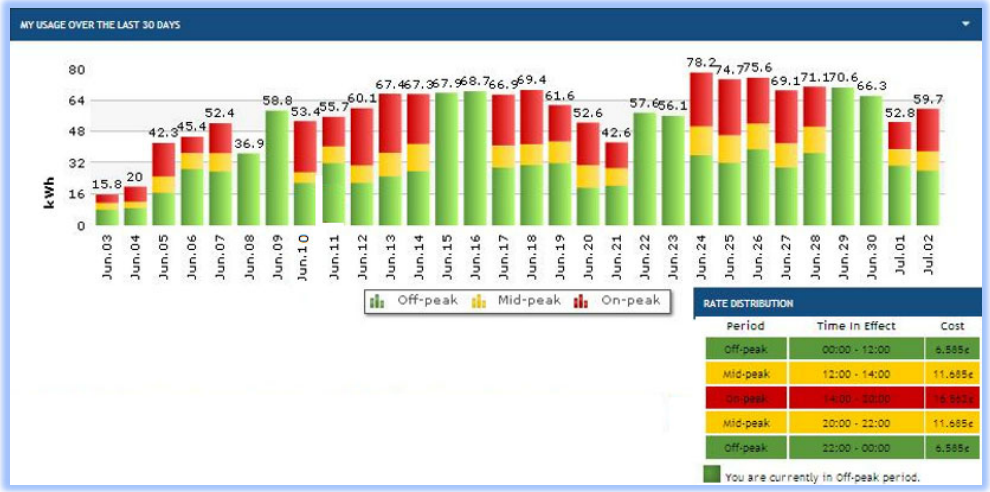
- More detailed and timely consumption data
  - 15-minute interval consumption data
  - Timely identification of equipment and system overloads
  - Time-of-use rates
  - Reduce electric line and water system losses
  - Enables Conservation Voltage Reduction (CVR)

AMI & Smart Grid

- Tools to help conserve energy and water
- Remote connect/disconnect meters
- Customer portal energy manager
- Fewer estimated bills
- Outage notification
- Improved Smart Grid operations
- Minimize trucks rolls - reduce emissions
- “Big Data” enables business analytics



Grid sensory intelligence



Customer portal with hourly consumption

AMI Deployments by Utility

Florida Municipal Utility AMI Systems			
City	Electric Customers	Water Customers	AMI Provider
Alachua	5,076	3,300	Tantalus
Clewiston	4,000		**Sensus**
Ft. Pierce (FPUA)	28,873	21,637	Honeywell
Gainesville (GRU)	98,000		Itron* (20% deployed)
Homestead	25,000		Tantalus
Jacksonville (JEA)	510,000	410,000	Landis & Gyr
Kissimmee (KUA)	86,086	n/a	Landis & Gyr
Lake Worth	27,000		Tantalus w/ Itron meters
Lakeland Electric	130,000	n/a	**Sensus**
Leesburg	27,000	n/a	Aclara
New Smyrna Beach	**30,026**	**20,931**	**RFP in progress**
Newberry	2,000	2,000	**Sensus**
Orlando (OUC)			Honeywell
Winter Park	15,000		**Sensus**
Tallahassee	125,000	100,000	Honeywell

AMI Deployments	
Sensus	**4**
Honeywell	3
Tantalus	2
Landis & Gyr	2
Itron	1*
Elster	1*
Aclara	1

Florida Municipal Utility AMI Systems

Florida Major Investor-Owned Utilities		
Utility	Electric Customers Served	AMI Provider
Florida Power & Light	5,214,245	Itron
Florida Power & Light	477,672	Sensus
Duke	1,879,651	ITron
Tampa Electric	802,050	Itron

Florida Major Investor-Owned Electric Utilities' AMI Systems

US Electric Cooperative AMI Systems		
Co-op	Electric Customers Served	AMI Provider
Baldwin	81,000	Landis&Gyr
Blue Ridge Energy	53,000	Landis&Gyr
Brunswick	90,000	Sensus
CHELCO	62,000	Sensus
Cobb	218,000	Sensus
CoServ	425,000	Landis&Gyr
DEMCO	100,000	Landis&Gyr
EnergyUnited	136,000	Sensus
Greystone	130,000	Sensus
Jackson	250,000	Sensus
Jones-Onslow	75,000	Landis&Gyr
LCEC	245,000	Aclara
Middle Tenn.	242,000	Landis&Gyr
Pedernales	345,000	Aclara
Sawnee	194,000	Sensus
South Central	119,000	Sensus
Wake	51,000	Sensus

AMI Deployments	
Sensus	9
Landis & Gyr	6
Aclara	2

Members of the Association of Largest Distribution Cooperative Electric AMI Systems

AMI Finalists – Evaluation Summary

- Evaluation Team unanimously ranked **Sensus** highest in each category and overall

Category	Description	Aclara	Sensus
		Importance Weighted Rating	Importance Weighted Rating
	Average of All Reviewers	34%	71%

Sensus

- Leader in "turn-key" AMI Smart-Grid system implementations for small-medium sized municipal and cooperative utilities with advanced functionality
- Solid electric and water meter support
- Effective network communications capabilities
- Robust distribution automation and grid sensor functionality
- Out of the box operational monitoring, reporting and data analytics package
- Project management team oversees execution

Questions

Recommend to Approve

Staff recommends a motion to approve the Advanced Metering Infrastructure (AMI) smart grid system and award RFP No. 19-22 to Sensus USA, Inc. in the amount of $12,999,637.22 and authorize the General Manager/ CEO or his designee to execute all documents associated with this project.