

IT/OT Preliminary Scoping Climate Plan Projects

Timing	Key System	Category	Initiative	Budget Year	Budget Year	Budget Year	Budget Year	Budget Year	Budget Year	Cost Estimate Notes
				Prelim Cost (Capital) 2021	Prelim Cost (O&M) 2021	Prelim Cost (Capital) 2022	Prelim Cost (O&M) 2022	Prelim Cost (Capital) 2023	Prelim Cost (O&M) 2023	
Year 1	Multiple	Preliminary Survey	In-depth discovery/preliminary survey to evaluate infrastructure systems and scope resiliency improvement projects.	\$5,037,974	\$49,002	\$4,157,062	\$222,142	\$4,069,750	\$222,142	*Preliminary Survey. Internal Staff (6) x 15 hours per week for the year x \$100 loaded rate. External Architect/Design Work \$250,000
Year 1	SCADA	OT Comms-RTU	Accelerate/complete RTU replacement in three year period	500,000		500,000		500,000		15 remaining. \$100,00 each for hardware, design, implementation. Break into 3 year implementation. Replace 1980 and earlier vintage RTU replacements.
Year 1	SCADA	OT Comms-RTU	Accelerate RTU 7000 Replacement (including Jmux transport)	3,520,000		3,520,000		3,520,000		+160000 per site. 130 sites. Break into 6 year implementation. Transition of Jmux, single head end infrastructure to Xtran mesh network technology.
Year 1	Telecommunications	Wireless Communications	Convert key GMP mobile phone users to AT&T FirstNet priority responder service	79,600	0	49,750	0	49,750	0	FirstNet plan costs will be equal to or less than enterprise wireless costs today. NO additional O&M costs will be incurred.
Year 1	Telecommunications	Internet Service	Establish carrier redundancy and seamless failover for internet access at core GMP facilities (Colchester and Rutland)	12,000	16,000		16,000		16,000	Additional Circuit Cost, Router Maintenance and Router, Design, Configuration
Year 1	Telecommunications	Radio System	Expand availability of satellite phones at key GMP facilities as pathway during total communication/radio loss	62,374	702		702		702	Based on 13 District Office/Storm Center Operations Locations. Ongoing voice plan cost.
Year 1	Telecommunications	Wireless Communications	Test/evaluate cellular backup channel for substation and enterprise network equipment	24,000	16,560		16,560		16,560	Evaluate @ 12 sites. \$1,380/site/year for service, \$2,000 per site for hardware.
Year 1	Call Center/IVR/Telephone Switch		Test transition of primary GMP 888 number and IVR services to the cloud as failover	5,000	15,740					Estimating setup and month long test of InContact of similar system.
Year 1	Customer/Stakeholder Communications		Develop & deploy cloud-based methods of email and text to customers/stakeholders separate from GMP's on-premise infrastructure	117,000						Estimate based on Phase I costs.
Year 1	SCADA		Create a separate, redundant electrical feed for Rutland OH facility							Cost Estimate Pending
Year 2	Telecommunications	Fiber System	Develop redundant fiber paths at key GMP facilities							More Discovery Needed
Year 2	Call Center/IVR/Telephone Switch		Development of cloud-based call center services (888, ACD, IVR) as a failover with regular testing			87,312	188,880		188,880	Based on InContact Call Center in the Cloud Quote (2016). Needs refresh.
Year 2	Application Infrastructure	Outage Management, BIS, Customer Service/Billing, Meter Data Management, AMI Head-End, Data Warehouse	Evaluate methods to establish minimum functionality, cloud-based instances of critical applications where vendor-provided cloud options not available							Cost Estimate to be developed
Year 2	Application Infrastructure	Customer Service/Billing & Meter Data Management	Pilot production operation of customer service/billing and meter data manager from the Oracle cloud							Cost Estimate to be developed
Year 2-3	Advanced Metering Infrastructure		Test methods of backup power for gatekeepers (battery, solar) to extend use during longer outage events							Cost Estimate to be developed
Year 3	Telecommunications	Radio System	Harden backup power capability of radio transmission sites in partnership w/ Velco							Cost Estimate to be developed
Year 3	Telecommunications	Internet Service	Evaluate ISP services from Velco							Cost Estimate to be developed
Year 3	Call Center/IVR/Telephone Switch		Test feasibility of re-establishing call center at remote facility (hotel, disaster facility, etc.) in the event GMP facilities are long-term compromised							Cost Estimate to be developed
Year 3	Customer/Stakeholder Communications		Design/build stakeholder-focused website-portal to deliver near real-time updates of status, maps, incidents, etc. to stakeholders during events							Cost Estimate to be developed
Year 3	Advanced Metering Infrastructure		Evaluate a cloud-based redundant instance of head-end system to manage meters, gatekeepers & other devices for failover							Cost Estimate to be developed
Year 3	Application Infrastructure	Customer Service/Billing & Meter Data Management	Test cloud-based environments for production processing of customer service/billing and meter data management applications							Cost Estimate to be developed
Year 3	Application Infrastructure	Data Warehouse	Test cloud-based data warehouse capabilities to be a source of data access for key applications							Cost Estimate to be developed
Year 3	Application Infrastructure	GIS	Test cloud-based GIS system failover							Cost Estimate to be developed
Year 3	SCADA		Upgrade Orion LXs to enable laptop access to SCADA management so functions can be manually performed should SCADA networks be compromised							Cost Estimate to be developed
Year 3	SCADA		Proof-of-concept self healing grid use cases through use of FLISR, etc.							Cost Estimate to be developed

Later Year Work Anticipated

Timing	Key System	Category	Initiative
Year 4	SCADA	OT Comms-RTU	Accelerate RTU 7000 Replacement (including Jmux transport)
Year 4	Telecommunications	Radio System	Investigate methods to bridge radio system communications over IP
Year 4	Advanced Metering Infrastructure		Transition AMI Gatekeepers to FirstNet Priority Network.
Year 4	Application Infrastructure		Establish a method to re-point data and control customer-side DERs from a non-GMP location in the event of a failure
Year 4-5	SCADA		Evaluate virtualization and cloud deployment of ACS SCADA system for production
Year 5	SCADA	OT Comms-RTU	Accelerate RTU 7000 Replacement (including Jmux transport)
Year 5	Advanced Metering Infrastructure		Transition AMI Gatekeepers to FirstNet Priority Network.
Year 6	SCADA	OT Comms-RTU	Accelerate RTU 7000 Replacement (including Jmux transport)
	Advanced Metering Infrastructure		Migrate head-end system to a virtualized front-end environment while also standing up a redundant cloud-environment for failover
	Advanced Metering Infrastructure		Enhance AMI head-end to accept data from broader range of devices for billing, telemetry and outage messages