

# Attachment E: Build and Impact Metrics

## Table of Possible Build Metrics

CATEGORIES	TABLE OF POSSIBLE BUILD METRICS
<b>Distribution Modifications</b>	Miles of new distribution lines
	Miles of distribution lines undergrounded
	Miles of distribution lines of vegetation clearing
	Miles of distribution lines reconducted
	Miles of distribution lines with other upgrades (specify what was upgraded)
	Number of distribution poles inspected
	Number of distribution poles replaced
	Number of distribution poles with other upgrades (specify what is upgraded)
	Miles of new distribution lines
	Miles of distribution lines undergrounded
	Miles of distribution lines of vegetation clearing
	Miles of distribution lines reconducted
<b>Transmission Modifications</b>	Miles of new transmission lines (specify capacity (GW-mile))
	Miles of transmission lines undergrounded
	Miles of transmission lines of vegetation clearing
	Miles of transmission lines reconducted
	Miles of transmission lines with other upgrades (specify what was upgraded)
	Number of transmission structures inspected
	Number of transmission structures replaced
	Number of transmission structures with other upgrades (specify what was upgraded)
	Miles of new transmission lines (specify capacity (GW-mile))
	Miles of transmission lines undergrounded
	Miles of transmission lines of vegetation clearing
	Miles of transmission lines reconducted
	Miles of transmission lines with other upgrades (specify what was upgraded)
	Number of transmission structures inspected
Number of transmission structures replaced	
Number of transmission structures with other upgrades (specify what was upgraded)	
<b>Substation Modifications</b>	Number of substations relocated
	Number of substations with added physical protection
	Number of substations with added sensors/monitors
	Number of substations with elevated equipment
	Number of substations with upgraded equipment
	Number of substations with other upgrades (specify what was upgraded)
<b>Monitoring and Control Devices</b>	Number of fault location, isolation and service restoration (FLISR) devices installed
	Number of other monitoring/metering devices installed
	Number of other protection or control devices installed
<b>Batteries</b>	Power Rating of battery system installed (MW) (specify mobile or permanent installation)
	Is battery system "off-grid", "behind-the-meter" or part of a "microgrid"? (specify)
<b>Mobile Units</b>	Energy rating of battery installed (MWh)
	Voltage rating of mobile substation (kV)
	Voltage rating of mobile transformers (kV)
	Capacity rating of hardened generation (MW) - photovoltaics
	Capacity rating of hardened generation (MW) - wind
	Capacity rating of hardened generation (MW) - diesel
	Capacity rating of hardened generation (MW) - natural gas
	Capacity rating of hardened generation (MW) - coal

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<b>Hardened Generation</b>	Capacity rating of hardened generation (MW) - nuclear
	Capacity rating of hardened generation (MW) - hydropower
	Average annual electricity produced of hardened generation (MWh) - photovoltaics
	Average annual electricity produced of hardened generation (MWh) - wind
	Average annual electricity produced of hardened generation (MWh) - diesel
	Average annual electricity produced of hardened generation (MWh) - natural gas
	Average annual electricity produced of hardened generation (MWh) - coal
	Average annual electricity produced of hardened generation (MWh) - nuclear
	Average annual electricity produced of hardened generation (MWh) - hydropower
	Capacity rating of hardened generation (MW) - photovoltaics
	Capacity rating of hardened generation (MW) - wind
	Capacity rating of hardened generation (MW) - diesel
	Capacity rating of hardened generation (MW) - natural gas
	Capacity rating of hardened generation (MW) - coal
Capacity rating of hardened generation (MW) - nuclear	
Capacity rating of hardened generation (MW) - hydropower	
<b>Fuel Supply</b>	Percent increased energy storage capacity in reserve fuel - diesel
	Percent increased energy storage capacity in reserve fuel - propane
	Percent increased energy storage capacity in reserve fuel - gasoline
<b>Restoration Equipment</b>	Number of transportation assets purchased to assist with power restoration (specify equipment)
	Number of communications assets purchased to assist with power restoration (specify equipment)
<b>Operating Systems</b>	Percentage of system migrated into new software system (specify software system, inventory management, workforce management, or other)
<b>Inventory</b>	Percentage increase in pole inventory
	Percentage increase in transformer inventory
	Percentage increase in equipment inventory (specify type of equipment)
	Expected lifetime of new equipment (specify equipment)
	Other (Specify necessary info)

## Table of Possible Impact Metrics

IMPACT CATEGORIES	POSSIBLE IMPACT METRICS
<b>Outages</b>	Largest outage cause
	Number of outages
	Hours to repair outages
	System Average Interruption Duration Index (SAIDI)
	Customer Average Interruption Duration Index (CAIDI)
	System Average Interruption Frequency Index (SAIFI)
	Customer Average Interruption Frequency Index (CAIFI)
	Number of individual customers with more than 5 interruptions
	Number of individual customer outages that extend beyond 24 hours
	Number of critical services with outages that extend beyond 24 hours
	Hours of unmet load
	Average hours to restore 50% of customers

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	Average hours to restore 90% of customers
	Average hours to restore 100% of customers
<b>Damages</b>	Outage recovery cost (\$)
	Hours line loading exceeded normal rating
	Number of poles damaged
	Feet of conductor replaced
	Number of electrical components damaged
<b>Customers Benefitted</b>	Number of residential customers benefitted by project
	Number of commercial customers benefitted by project
	Number of industrial customers benefitted by project
	Number of customers provided community services/emergency centers benefitted by project
	Number of customers provided communication services benefitted by project
	Number of customers provided energy supply benefitted by project (specify service)
	Number of customers provided transportation services benefitted by project
	Number of customers provided water services benefitted by project
	Number of customers provided food services benefitted by project
<b>Other</b>	Describe metric type