Tracking New Energy Infrastructure with Fuel Stockpiles Supplement

Data as of December 31, 2017

NETL-PUB-21856

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Introduction

- **This report provides a perspective on energy infrastructure under development as of the end of 2017, focusing on those making significant progress toward achieving commercial operation**
- **Project states vary from announcements to under construction**
- **The states of "Announced" or "Early Development" are not necessarily strong indicators of commitment of major capital and human resources; development through operational capacity additions is highly dependent on the market environment**
  - Entry into permitting and interconnection processes nominally require some expenditure of capital by the project developer. These expenses alone are not sufficient to move a project from "Early Development" to "Advanced Development" status because there is still a high level of uncertainty, pending approvals, and alone, result in no more than project related paper.
- **Projects in "Advanced Development" or "Under Construction" -"Progressing Projects"- reflect a more significant financial and human resource commitment to completion and offer a better perspective of the new capacity that may be forthcoming**

Tracking New Power Plants and Electric Transmission Projects

- This report provides a snapshot of new power plant and electric transmission activity as of December 31, 2017 based on total nameplate capacity, proposed online year (the year the project is proposed to be operational), and fuel type for power plants for the following development status categories:

Reported Project Status Categories and Descriptions

Status Listing	*Description*
Announced	Project has been listed in an interconnection queue and has been reported publicly or has initiated a permitting action.
Early Development	Project has formally commenced the permitting process.
Advanced Development	Project meets two or more of the following criteria: financing has been secured, power purchase agreement(s) has been signed, turbine(s) has been secured, required permits have been approved, or an Engineering, Procurement, and Construction (EPC) contractor has signed on to the project. Site preparation may have begun.
Construction Begun	Project has commenced actual construction. Site preparation does not qualify, as often times a developer will engage in site preparation activities to maintain project permits.
Completed	Project has reached commercial operation.

Tracking New Natural Gas Pipeline Projects

- This report provides a current snapshot of new natural gas pipeline project activity based on proposed online year (the year the project is proposed to be operational), and capacity for the following development status categories:

Reported Project Status Categories and Descriptions

Status Listing	*Description*
Announced	Project sponsors have publicly announced the intent to build or scope out a new pipeline.
On Hold	Project has been publically postponed by the project sponsors, possibly indefinitely, but could be reinitiated at a later date. A project can enter this status at any point in the development process.
Pre-Filing	Project has initiated the early project development process. This step details need for facility, involved parties, regulatory agencies, existing work, and public participation plan. This step is usually initiated 7-8 months before application process.
Applied	Project has initiated the formal application with the Federal Energy Regulatory Commission (FERC). FERC prepares an Environmental Impact Statement (EIS) after conferring with concerned organizations and the public to determine necessity, safety and feasibility of a project. Regulatory approval is based upon the final EIS.
Approved	Project has received a permit to construct and operate. Usually accommodated by any conditions that must be met and market rate authority. From this point, the project must still obtain Clean Air and Water Act permits and state approval, often these permits are pursued concurrently with the FERC permit process, but are also contingent upon the EIS.
Under Construction	Project has commenced actual construction; site preparation does not qualify. Facility must file monthly reports offering a summary of activity, status of outstanding permits, current project schedule and compliance with environmental conditions outlined in the approval document.
Completed	Project has reached commercial operation.

Tracking New Liquefied Natural Gas Projects

- This report provides a current snapshot of new liquefied natural gas project activity based on proposed online year (the year the project is proposed to be operational), and capacity for the following development status categories:

Reported Project Status Categories and Descriptions

Status Listing	*Description*
Announced	Project sponsors have publicly announced the intent to build or scope out a new facility.
Studying Feasibility	Study includes site location, marketability, need and identification of possible stakeholders. Feasibility study does not mean that the project will proceed.
On Hold	Project has been publically postponed by the project sponsors, possibly indefinitely, but could be reinitiated at a later date. A project can enter this status at any point in the development process.
Pre-Filing	Project has initiated the early project development process. This step details need for facility, involved parties, regulatory agencies, existing work, and public participation plan. This step is usually initiated 7-8 months before application process.
Applied	Project has initiated the formal application with FERC. FERC prepares an Environmental Impact Statement (EIS) after conferring with concerned organizations and the public to determine necessity, safety and feasibility of a project. Regulatory approval is based upon the final EIS.
Approved	Project has received a permit to construct and operate. Usually accommodated by any conditions that must be met and market rate authority. From this point, the project must still obtain Section 401 permits, coastal zone clearance, Clean Air and Water Act permits, and state approval, often these permits are pursued concurrently with the FERC permit process, but are also contingent upon the EIS.
Under Construction	Project has commenced actual construction; site preparation does not qualify. Facility must file monthly reports offering a summary of activity, status of outstanding permits, current project schedule and compliance with environmental conditions outlined in the approval document.
Completed	Project has reached commercial operation.

Power Plant Development Projects

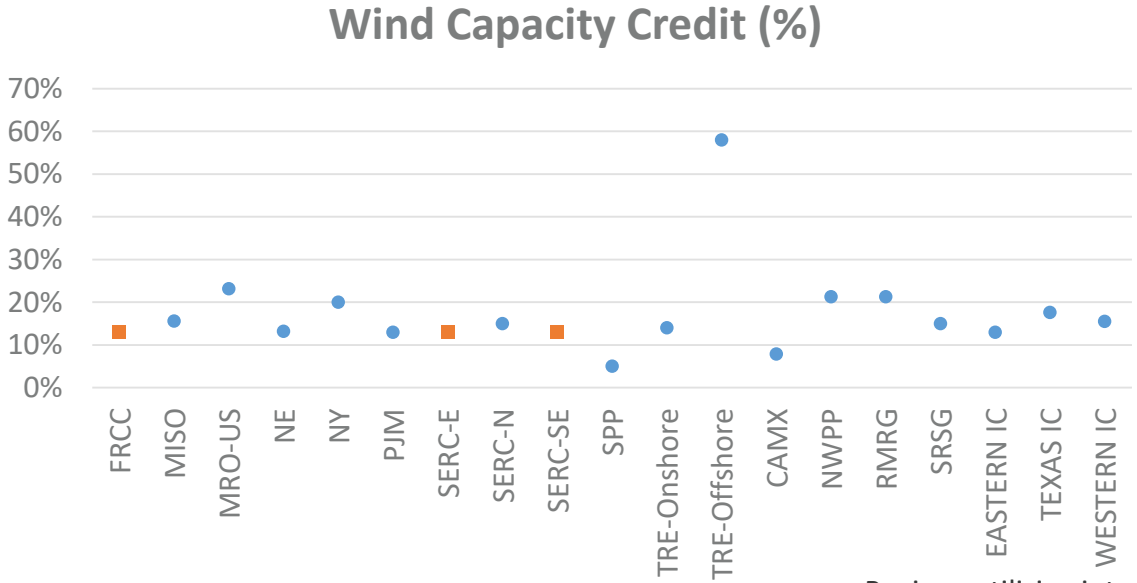
- This report provides current snapshot of new power plant activity based on development status, total nameplate capacity, and proposed online year (the year the plant is proposed to be operational) for the following fuel categories:

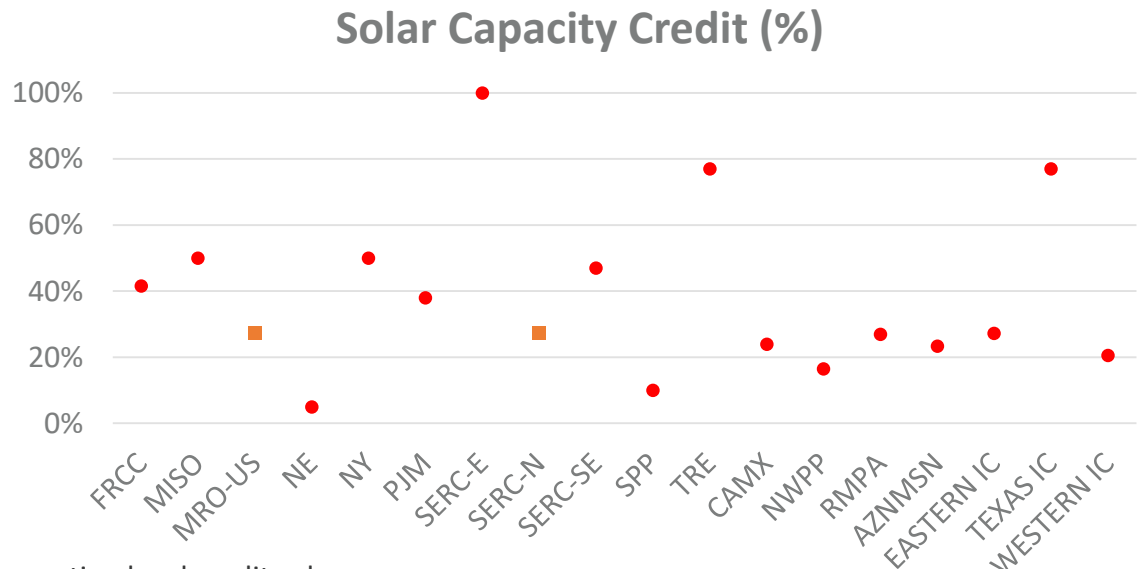
Reported Fuel Categories and Descriptions

Fuel	*Description*
Coal	Includes all steam based (subcritical, supercritical, ultra-supercritical, and circulated fluidized bed) and integrated gasification combined cycle units
Natural Gas (NG)	Primary gas-firing units inclusive of gas turbine (GT) (simple cycle), Combined Cycle, and Gas-Primary Steam and Internal Combustion units.
Wind	Wind turbine driven units
Nuclear	All reactor types
Solar	Includes both photovoltaic and solar thermal plants
Hydro	Includes both conventional, run-of-river, tidal, hydraulic turbine, and pumped storage units
Energy Storage	Includes battery storage, compressed air storage, flywheels, and others
Other	Includes biomass, landfill gas, municipal solid waste, geothermal, fuel cells, and others

Tracking New Power Plants

- **This report provides comparisons of new power plant capacity from both the nameplate and capacity credit perspectives by fuel category using the regional capacity credit factors utilized in the NERC assessment process for wind and solar resources**
  - These factors are developed by the planning regions based on historical rates of peak hour performance. Regions with outlying factors are an artifact of small capacity installations or lack historical data upon which to establish a lower credit.
- **This report assumes interconnection level average credit for areas that do not have a specified credit**
- **Hydroelectric resources are credited at 37% across all regions**





Regions utilizing interconnection level credit values

Capacity Development Duration

- For units entering service between 2010 and 2017, the duration from announcement to completion varied widely by technology type and fuel. Development duration is impacted by a number of factors including labor availability, component production lead times, permitting duration, market viability, etc.

Fuel	Technology Type	Development Duration (Years)*
Coal	Fluidized Bed	5.2
	Supercritical	7.3
	Subcritical	4.9
	Integrated Gasification Combined Cycle	8.5
Natural Gas (NG)	Combined Cycle	5.6
	Combustion Turbine	2.9
	Fuel Cell	2.7
	Internal Combustion	2.0
Petroleum	Gas Turbine	3.3
	Internal Combustion	1.3
Wind	Turbine	3.0

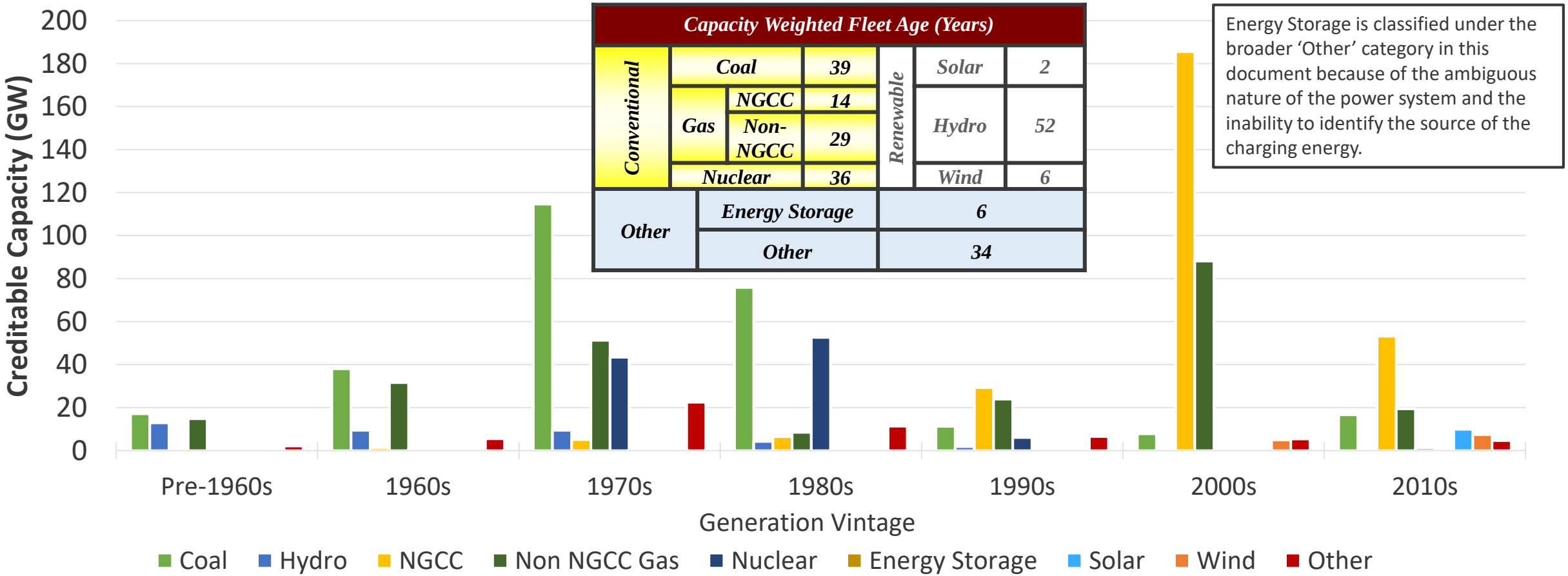
Fuel	Technology Type	Development Duration (Years)*
Biomass	Combined Cycle	2.3
	Combustion Turbine	2.0
	Fuel Cell	1.2
	Internal Combustion	2.1
	Fluidized Bed	4.2
	Subcritical	2.6
Solar	Concentrated	5.8
	Thin Cell	2.4
	Trough	6.5
Hydro	Francis Turbine	5.5
	Kaplan Turbine	4.9
	Pelton Turbine	4.6
	Pumped Storage	10.0

Fuel	Technology Type	Development Duration (Years)*
Geothermal	Binary Turbine	4.9
Nuclear	Pressurized Water Reactor	46.0
Energy Storage	Battery	0.5
	Flywheel	1.0

* Capacity Weighted Average

State of the U.S. Electric Generating Fleet

Coal, Natural Gas, Wind, Nuclear, Solar, Hydro, Energy Storage, & Other***



Capacity Weighted Fleet Age (Years)					
Conventional	Coal		39	Renewable: Solar	2
	Gas	NGCC	14	Hydro	52
		Non-NGCC	29		
	Nuclear		36	Wind	6
Other	Energy Storage		6		
	Other		34		

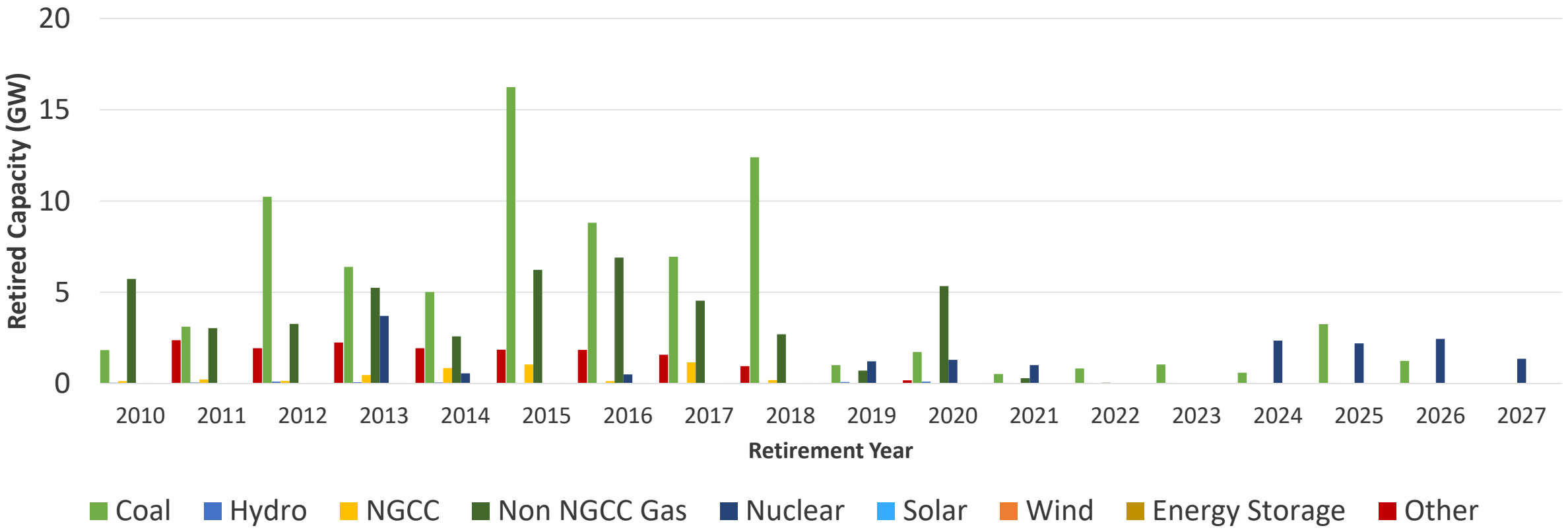
Energy Storage is classified under the broader 'Other' category in this document because of the ambiguous nature of the power system and the inability to identify the source of the charging energy.

*Unlike the NERC Long-Term Reliability Assessment that considers Pumped Storage to be an Energy Storage resource, this document considers Pumped Storage to be a hydroelectric resource.

**Other consists of: Petroleum, Biomass, Geothermal, Waste Heat, and Unclassified Gaseous Fuels

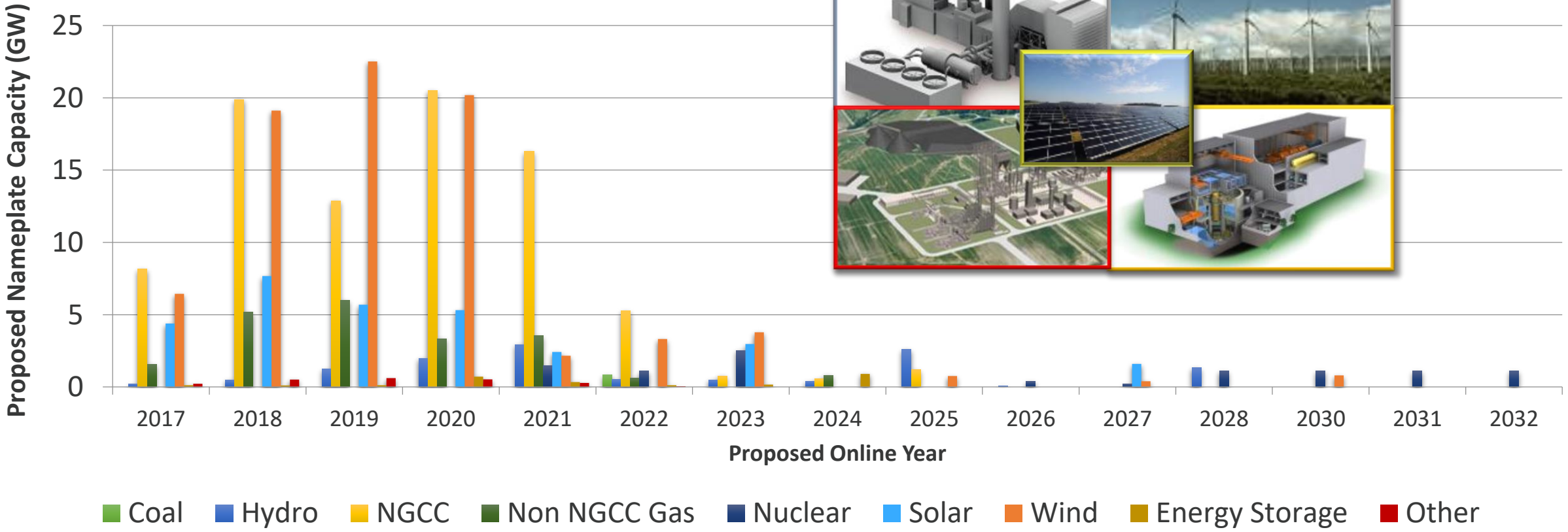
State of the U.S. Electric Generating Fleet

Coal, Natural Gas, Wind, Nuclear, Solar, Hydro, Energy Storage, & Other***



Proposed U.S. New Nameplate Capacity

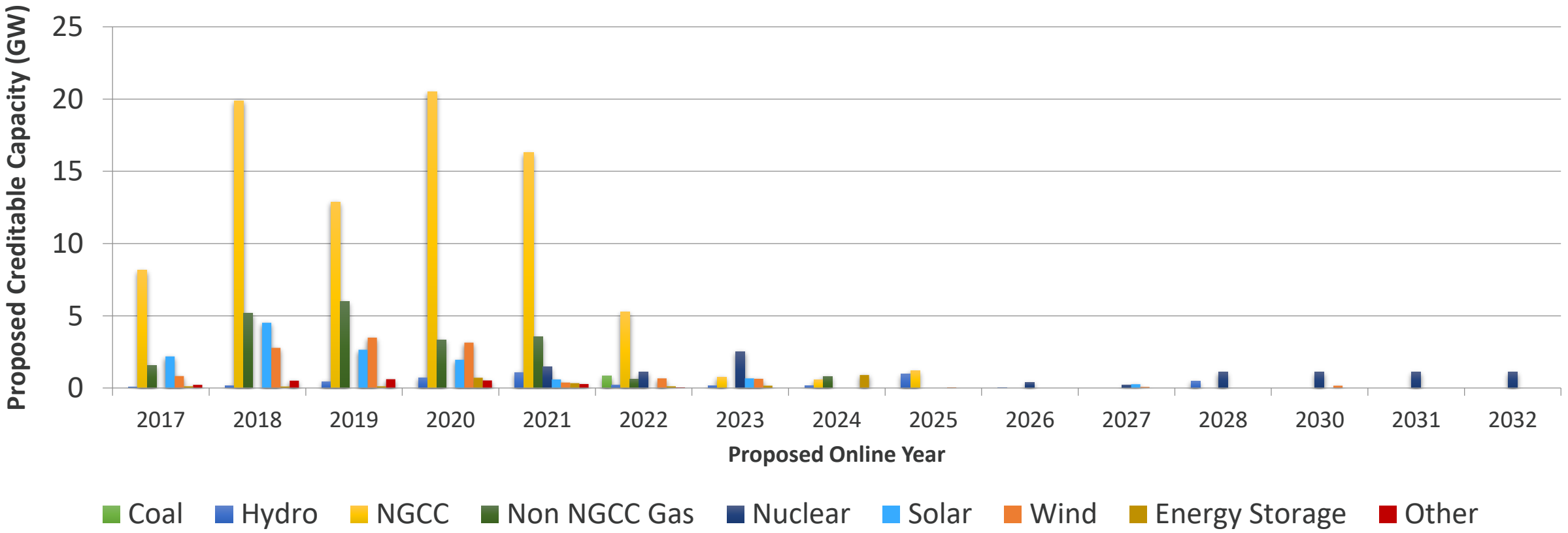
*Coal, Natural Gas, Wind, Nuclear, Solar, Hydro, Energy Storage, & Other**



*Other consists of: Petroleum, Biomass, Geothermal, Waste Heat, and Unclassified Gaseous Fuels

Proposed U.S. New Creditable Capacity

*Coal, Natural Gas, Wind, Nuclear, Solar, Hydro, Energy Storage, & Other**



*Other consists of: Petroleum, Biomass, Geothermal, Waste Heat, and Unclassified Gaseous Fuels

Current Capacity Projects

Units proposed for entry into service after January 1, 2017

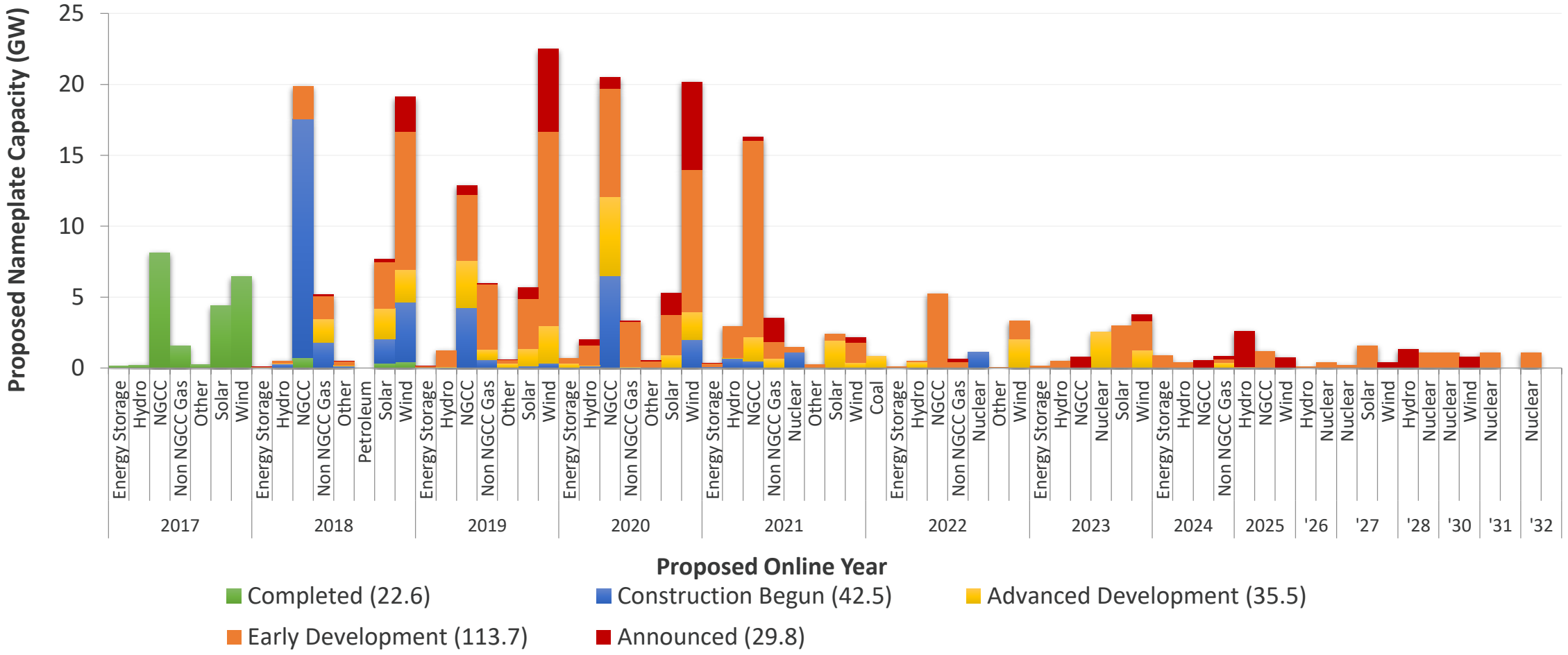
NATIONAL ENERGY TECHNOLOGY LABORATORY

	Fuel Category		Number of Units	Nameplate Capacity (MW)	Creditable Capacity (MW)
Non-Renewable Projects	Coal		1	850	850
	Natural Gas	Combined Cycle	288	85,514	85,514
		Combustion Turbine	141	19,263	19,263
		Internal Combustion	139	1,517	1,517
	Nuclear		22	10,100	10,100
	Conventional SUB TOTAL		591	117,244	117,244
Renewable Projects	Solar		965	30,066	12,871
	Wind		409	79,468	12,241
	Hydro		144	12,294	4,549
	Renewable SUB TOTAL		1,518	121,828	29,661
	Energy Storage		70	2,576	2,576
	Other		94	2,495	2,495
	Other SUB TOTAL		164	5,071	5,071
	TOTAL		2,273	244,143	151,976

*Other consists of: Biomass, Geothermal, Waste Heat, Petroleum, and Unclassified Gaseous Fuels.

Status of Proposed U.S. New Nameplate Capacity

*Coal, Natural Gas, Wind, Nuclear, Solar, Hydro, Energy Storage, Other**

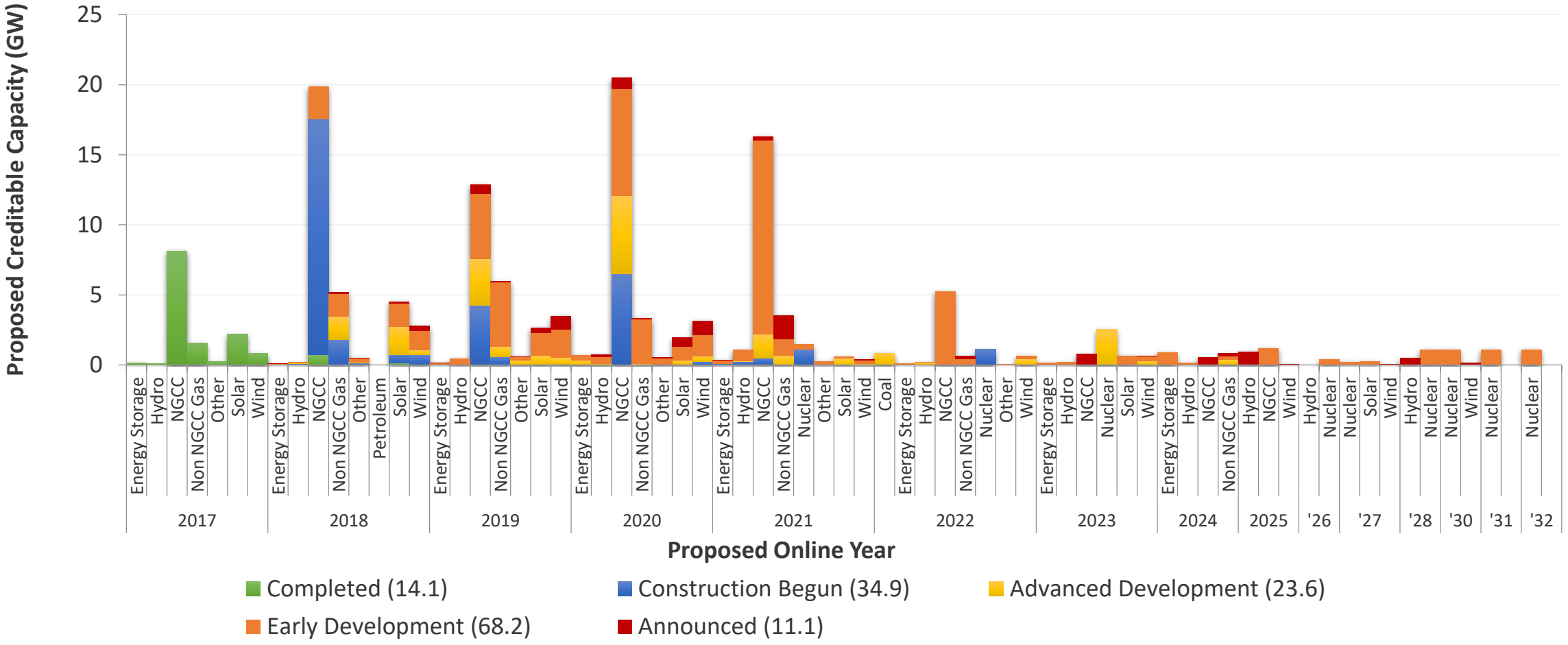


*Other consists of: Biomass, Geothermal, and other Unclassified Fuels

244.1 GW in Total

Status of Proposed U.S. New Creditable Capacity

*Coal, Natural Gas, Wind, Nuclear, Solar, Hydro, Energy Storage, Other**



*Other consists of: Biomass, Geothermal, and other Unclassified Fuels

151.9 GW in total

Current Uncertain Capacity Projects

Units proposed for entry into service after January 1, 2017

General Status		Announced			Early Development		
		Number of Plants	Nameplate Capacity (MW)	Creditable Capacity (MW)	Number Of Plants	Nameplate Capacity (MW)	Creditable Capacity (MW)
Non-Renewable Projects	Coal	—	—	—	—	—	—
	Natural Gas – Combined Cycle	10	3,054	3,054	99	34,960	34,960
	Natural Gas – Combustion Turbine	14	2,361	2,361	66	10,687	10,687
	Natural Gas – Internal Combustion	10	44	44	50	540	540
	Nuclear	—	—	—	18	5,360	5,360
	Conventional SUB TOTAL	34	5,459	5,459	233	51,547	51,547
Renewable Projects	Solar	42	2,582	1,139	222	14,628	5,397
	Wind	73	17,338	2,681	178	38,134	5,738
	Hydro	5	4,216	1,560	81	6,176	2,285
	Renewable SUB TOTAL	120	24,136	5,380	481	58,938	13,420
	Energy Storage	6	56	56	36	1,932	1,932
	Other	12	156	156	23	1,279	1,279
	Other SUB TOTAL	18	212	212	59	3,211	3,211
	Uncertain SUB TOTAL	172	29,807	11,051	773	113,696	68,178

*Other consists of: Biomass, Petroleum, Geothermal, Waste Heat, and Unclassified Gaseous Fuels.

Current Progressing Capacity Projects

Units proposed for entry into service after January 1, 2017

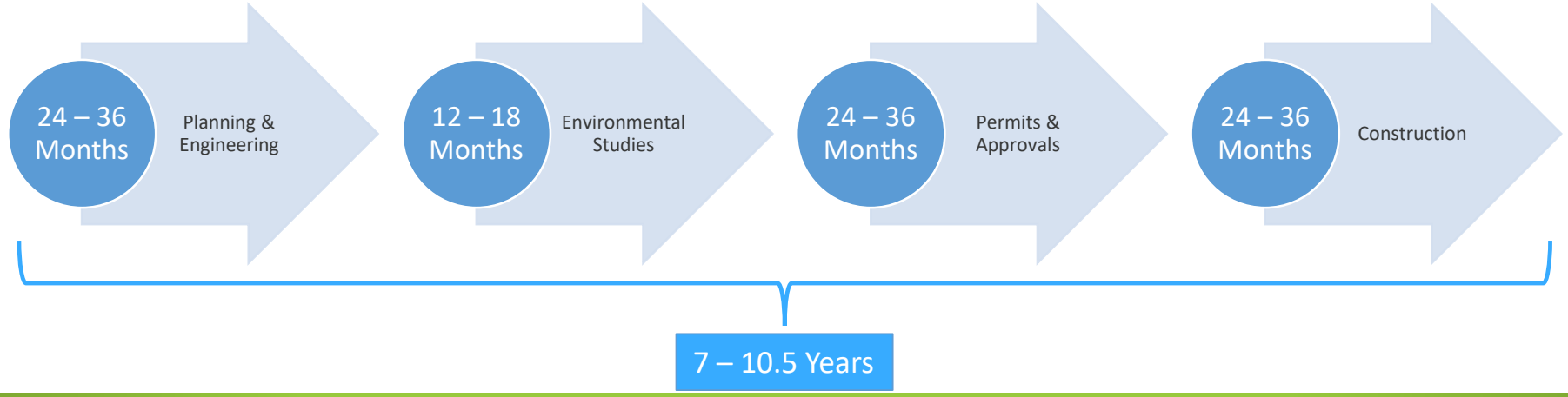
	General Status		Advanced Development			Construction Begun			Completed		
			Number of Plants	Nameplate Capacity (MW)	Creditable Capacity (MW)	Number Of Plants	Nameplate Capacity (MW)	Creditable Capacity (MW)	Number Of Plants	Nameplate Capacity (MW)	Creditable Capacity (MW)
Non-Renewable Projects	Coal		1	850	850	—	—	—	—	—	—
	Natural Gas	Combined Cycle	35	10,563	10,563	109	28,094	28,094	35	8842	8842
		Combustion Turbine	14	2,984	2,984	26	2,216	2,216	21	1021	1021
		Internal Combustion	25	414	414	17	189	189	37	330	330
	Nuclear		2	2,520	2,520	2	2,220	2,220	—	—	—
	Conventional SUB TOTAL		77	17,331	17,331	154	32,719	32,719	93	10,193	10,193
Renewable Projects	Solar		150	6,253	3,325	95	1,857	658	456	4745	2350
	Wind		57	10,558	2,009	27	6,541	917	74	6894	894
	Hydro		29	574	212	22	1,120	414	7	207	78
	Renewable SUB TOTAL		236	17,385	5,546	144	9,518	1,989	537	11,846	3,322
	Energy Storage		3	337	337	2	120	120	23	131	131
	Other		13	445	445	14	165	165	32	448	448
	Other SUB TOTAL		16	782	782	16	285	285	55	579	579
	Likely SUB TOTAL		329	35,498	23,659	314	42,522	34,993	685	22,618	14,094

*Other consists of: Biomass, Petroleum, Geothermal, Waste Heat, and Unclassified Gaseous Fuels

Electric Transmission Projects*

- Many generator interconnections often require the parallel development of transmission infrastructure to achieve operation and grid interconnection. These projects often have their own timelines and can lead to delays in generator operation.
- If a significant amount of the uncertain capacity fails to develop, the need for additional transmission infrastructure to deliver output from existing capacity and to maintain reliability may arise.
- Similar to generation, transmission project development duration is impacted by a number of factors including labor availability, component production lead times, permitting duration, market viability, etc.

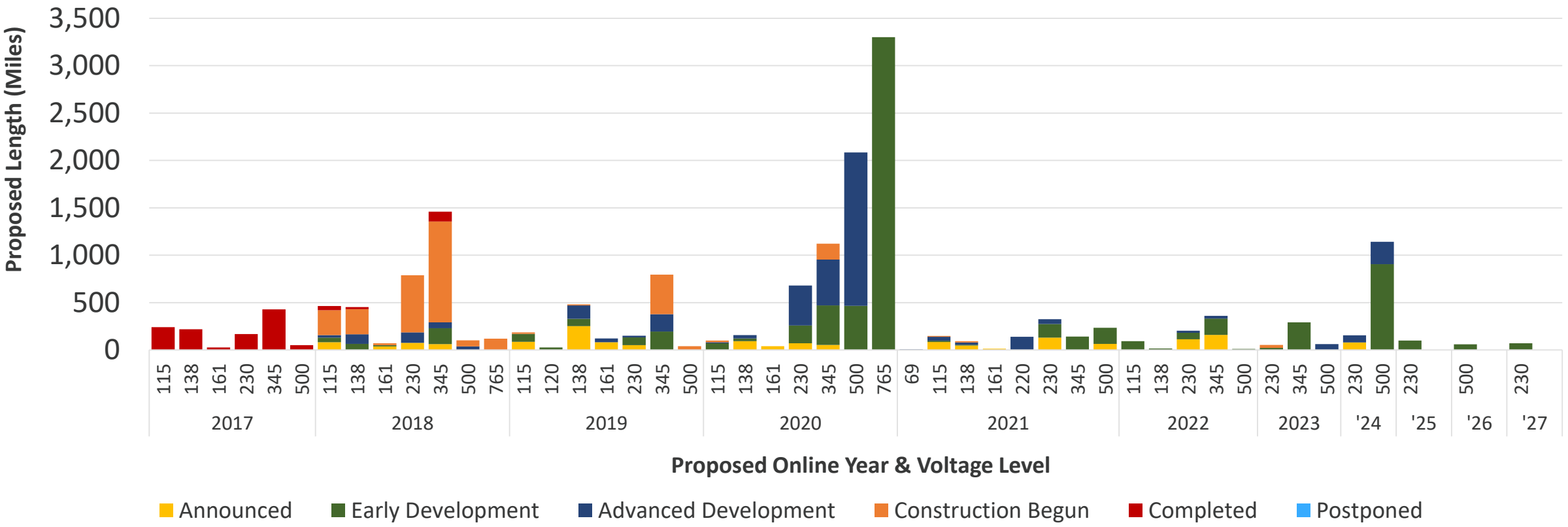
Typical Project Timeline for New Transmission



*Bulk Electric System Only

Source: Edison International, ***Getting to Know Renewable Energy*** (2012) http://inside.edison.com/content/inside/2012/08-12/gtk-8-12.html

Status of Proposed AC Electric Transmission Projects*



*17,394 AC miles in total, Bulk Electric System Only

Current AC Electric Transmission Projects*

	General Status	Sub-100 kV		115 kV		120 kV		138 kV		161 kV	
		Number of Projects	Mileage	Number of Projects	Mileage	Number of Projects	Mileage	Number of Projects	Mileage	Number of Projects	Mileage
Certain Projects	*Completed*	—	—	15	285.5	—	—	9	240.3	2	27.0
	Construction Begun	—	—	14	304.4	—	—	14	273.0	1	19.0
	Certain SUB TOTAL	—	—	29	589.9	—	—	23	513.3	3	46.0
Uncertain Projects	*Advanced Development*	1	7.0	3	80.0	—	—	15	256.0	1	39.3
	Postponed	—	—	—	—	—	—	—	—	—	—
	Early Development	—	—	14	307.5	2	26.0	10	197.8	1	15.0
	Announced	—	—	11	255.5	—	—	21	391.0	7	172.0
	Uncertain SUB TOTAL	1	7.0	28	643.0	2	26.0	46	844.8	9	226.3
	TOTAL	1	7.0	57	1,232.9	2	26.0	69	1,358.1	12	272.3

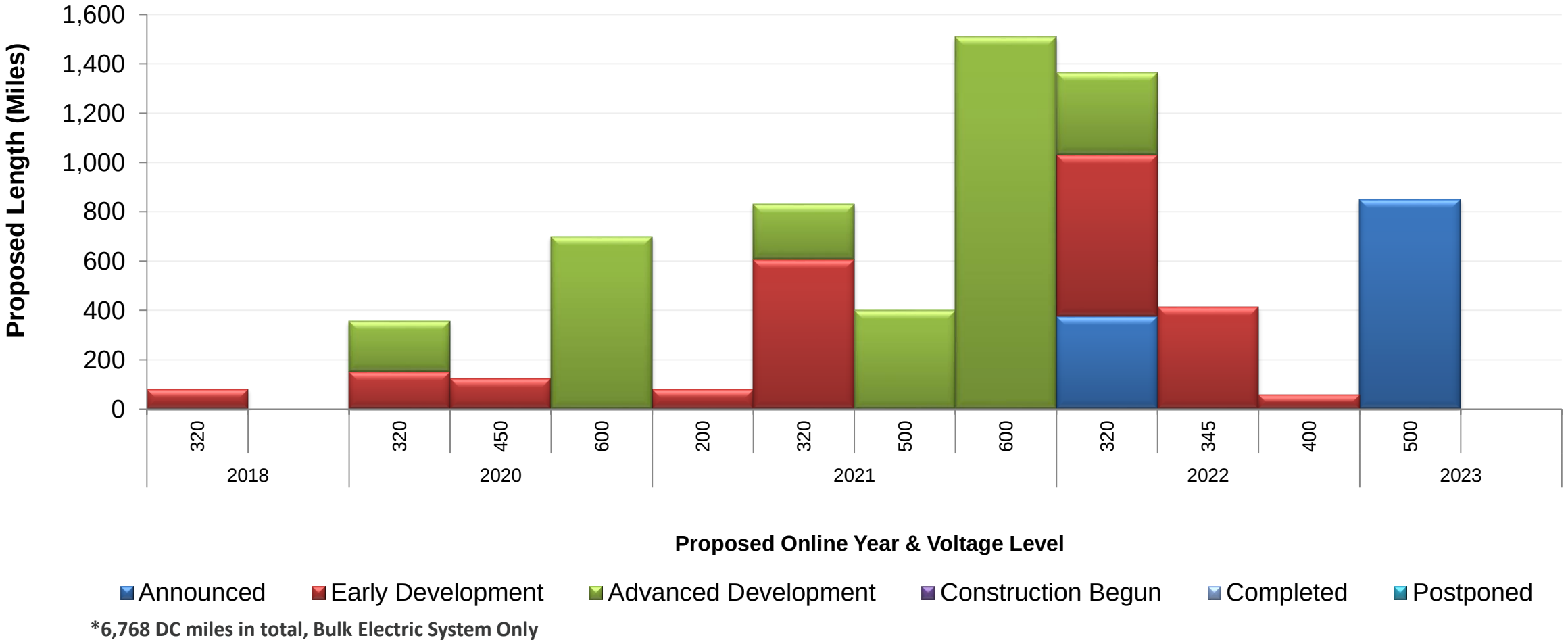
*Bulk Electric System Only

Current AC Electric Transmission Projects*

	General Status	220 kV		230 kV		345 kV		500 kV		765 kV	
		Number of Projects	Mileage	Number of Projects	Mileage	Number of Projects	Mileage	Number of Projects	Mileage	Number of Projects	Mileage
Certain Projects	Completed	—	—	7	168.5	11	532.0	1	51.0	—	—
	Construction Begun	—	—	19	633.0	19	1,649.0	4	106.0	2	120.0
	Certain SUB TOTAL	—	—	26	801.5	30	2,181.0	5	157.0	2	120.0
Uncertain Projects	Advanced Development	6	139.0	19	602.5	14	760.0	13	1,952.5	—	—
	Postponed	—	—	—	—	—	—	—	—	—	—
	Early Development	—	—	20	674.0	20	1,384.0	16	1,614.0	16	3,300.0
	Announced	—	—	15	471.2	6	277.0	1	64.0	—	—
	Uncertain SUB TOTAL	6	139.0	54	1,747.7	40	2,421.0	29	3,619.5	16	3,300.0
	TOTAL	6	139.0	80	2,549.2	70	4,602.0	34	3,787.5	18	3,420.0

*Bulk Electric System Only

Status of Proposed DC Electric Transmission Projects*



*6,768 DC miles in total, Bulk Electric System Only

Current DC Electric Transmission Projects*

	General Status	200 kV		320 kV		345 kV		400 kV		450 kV	
		Number of Projects	Mileage	Number of Projects	Mileage	Number of Projects	Mileage	Number of Projects	Mileage	Number of Projects	Mileage
Certain Projects	*Completed*	—	—	—	—	—	—	—	—	—	—
	Construction Begun	—	—	—	—	—	—	—	—	—	—
	Certain SUB TOTAL	—	—	—	—	—	—	—	—	—	—
Uncertain Projects	*Advanced Development*	—	—	5	765.0	—	—	—	—	—	—
	Postponed	—	—	—	—	—	—	—	—	—	—
	Early Development	1	79.0	6	1,492.0	2	413.0	1	59.0	1	125.0
	Announced	—	—	1	375.0	—	—	—	—	—	—
	Uncertain SUB TOTAL	1	79.0	12	2,632.0	2	413.0	1	59.0	1	125.0
	TOTAL	1	79.0	12	2,632.0	2	413.0	1	59.0	1	125.0

*Bulk Electric System Only

Current DC Electric Transmission Projects*

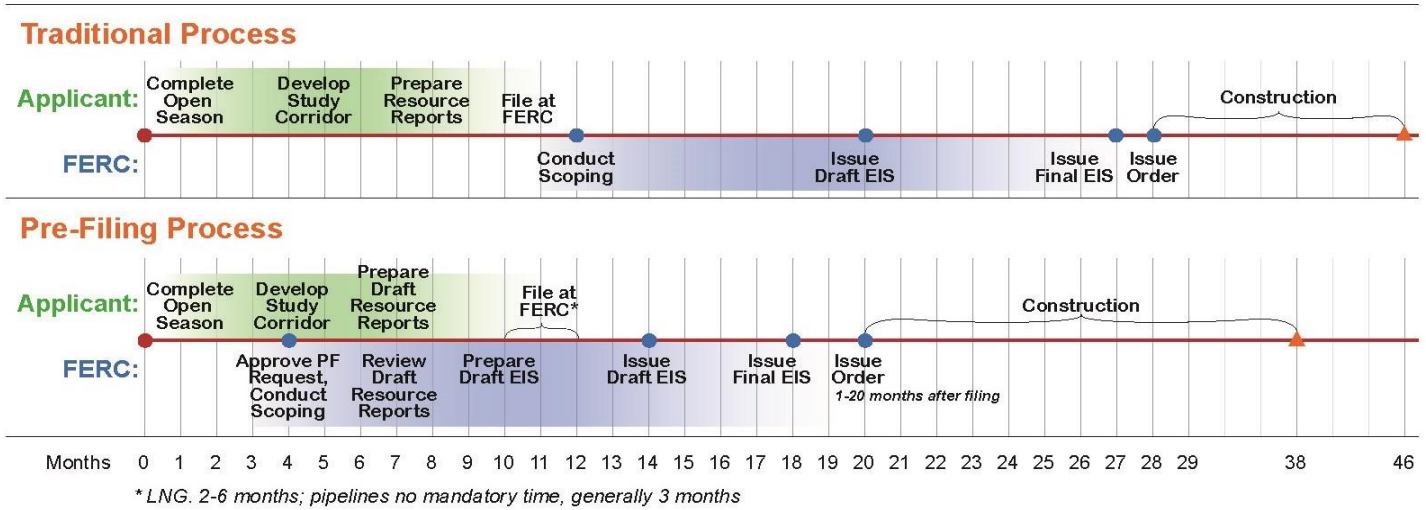
	General Status	500 kV		600 kV	
		Number of Projects	Mileage	Number of Projects	Mileage
Certain Projects	Completed	—	—	—	—
	Construction Begun	—	—	—	—
	Certain SUB TOTAL	—	—	—	—
Uncertain Projects	Advanced Development	1	400.0	—	—
	Postponed	—	—	—	—
	Early Development	—	—	—	—
	Announced	1	850.0	—	—
	Uncertain SUB TOTAL	2	1,250.0	3	2,210.0
	TOTAL	2	1,250.0	3	2,210.0

*Bulk Electric System Only

Natural Gas Pipeline Projects

- Given the expected buildout of new natural gas power generation, the time required to develop natural gas pipeline infrastructure should also be considered in parallel to capacity and transmission development in estimating when a unit will achieve operation and grid interconnection.
- Unlike other fuel infrastructures that are demand responsive, the source-to-sink nature of the natural gas system and costs involved in pipeline construction trigger advance utilization planning and contracts prior to development.

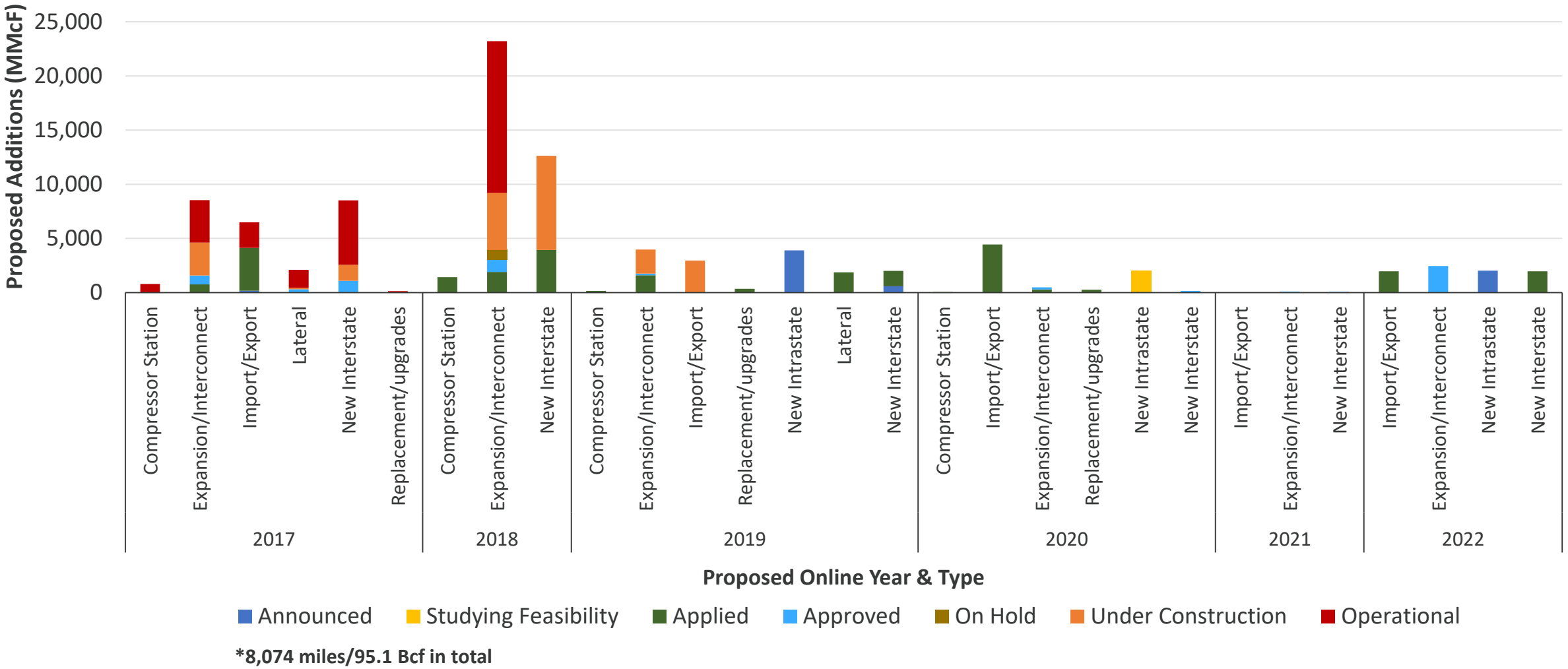
Typical Project Timeline for New Interstate Pipeline



* LNG. 2-6 months; pipelines no mandatory time, generally 3 months

Source: FERC timeline: Traditional vs. Pre-filing. [Online] n.d. [Cited: November 19, 2014]. Adapted from http://www.fs.fed.us/specialuses/documents/im2003-197attach3.pdf.

Status of Proposed Natural Gas Pipeline Projects



*8,074 miles/95.1 Bcf in total

Current Natural Gas Pipeline Projects

	General Status	Compressor Station			Expansion/Interconnect			Import/Export		
		Number of Projects	Mileage	Capacity Added (MMcf)	Number of Projects	Mileage	Capacity Added (MMcf)	Number of Projects	Mileage	Capacity Added (MMcf)
Certain Projects	Completed	2	0.0	809.7	11	370.3	17,916.6	3	4.8	2,409.3
	Under Construction	—	—	—	13	430.9	10,547.3	1	104.3	2,958.6
	Approved	—	—	—	10	119	4,851.1	—	—	—
	Certain SUB TOTAL	2	0.0	809.7	34	920.2	33,315.0	4	109.1	5,367.9
Uncertain Projects	Applied	4	1.2	1,652.4	15	246.2	4,564.7	5	286.8	10,355.0
	Pre-Filing	—	—	—	—	—	—	—	—	—
	Announced	—	—	—	2	44.0	0.0	1	125.0	179.5
	On Hold	—	—	—	1	96.6	912.2	—	—	—
	Uncertain SUB TOTAL	4	1.2	1,652.4	18	386.8	5,476.9	6	411.8	10,534.5
	TOTAL	6	1.2	2,462.1	52	1,307.0	38,791.9	10	520.9	15,902.4

Current Natural Gas Pipeline Projects

	General Status	Lateral			New Interstate			New Intrastate		
		Number of Projects	Mileage	Capacity Added (MMcf)	Number of Projects	Mileage	Capacity Added (MMcf)	Number of Projects	Mileage	Capacity Added (MMcf)
Certain Projects	Completed	2	118.2	1,625.2	4	1,187.3	4,852.1	1	195.0	1,084.8
	Under Construction	1	7.8	128.2	4	1,289.7	7,593.7	1	0.2	2,564.1
	Approved	1	3.1	315.6	3	114	1,333.3	—	—	—
	Certain SUB TOTAL	4	129.1	2,069.0	11	2,591	13.779.1	2	195.2	3,648.9
Uncertain Projects	Applied	1	42.7	1,873.8	5	404.6	7,337.3	—	—	—
	Pre-Filing	—	—	—	—	—	—	—	—	—
	Feasibility Study	—	—	—	—	—	—	1	470.0	2,025.6
	Announced	—	—	—	2	390.0	591.7	4	1,791.0	5,925.0
	Uncertain SUB TOTAL	1	42.7	1,873.8	7	794.6	7,929.0	5	2,261.0	7,950.6
	TOTAL	5	171.8	3,942.8	18	3,385.6	21,708.1	7	2456.2	11,599.5

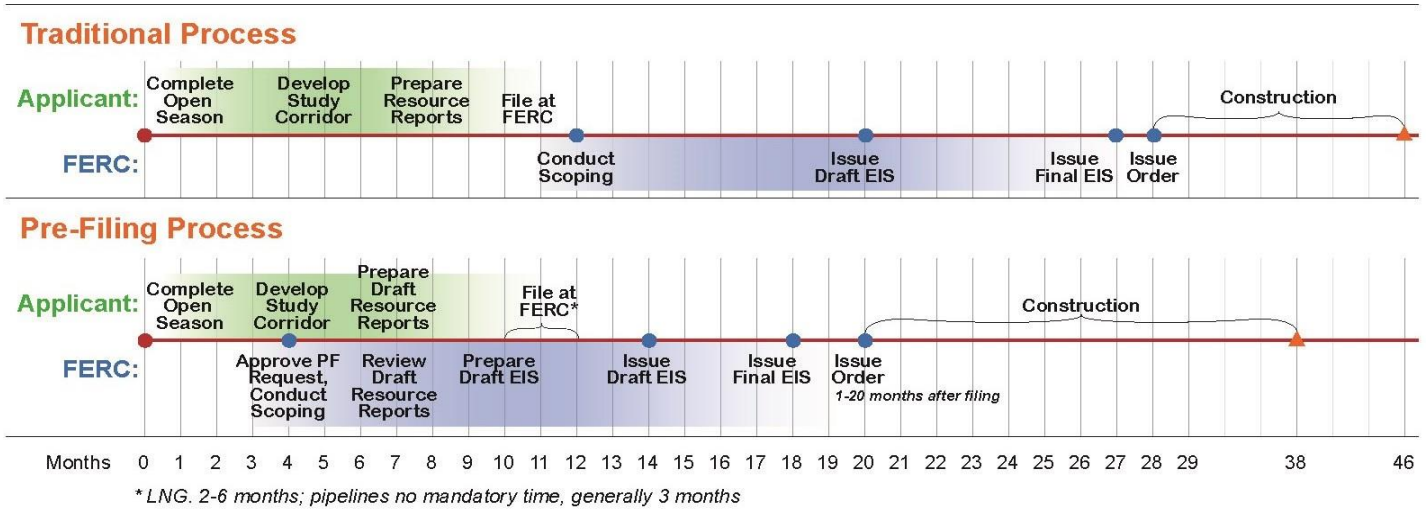
Current Natural Gas Pipeline Projects

	General Status	Replacement/Upgrades		
		Number of Projects	Mileage	Capacity Added (MMcf)
Certain Projects	Completed	1	36.2	130.9
	Under Construction	—	—	—
	Approved	1	7.0	0.0
	Certain SUB TOTAL	2	43.2	130.9
Uncertain Projects	Applied	3	188.6	616.4
	Pre-Filing	—	—	—
	Announced	—	—	—
	Uncertain SUB TOTAL	3	188.6	616.4
	TOTAL	5	231.8	747.2

Liquefied Natural Gas Projects

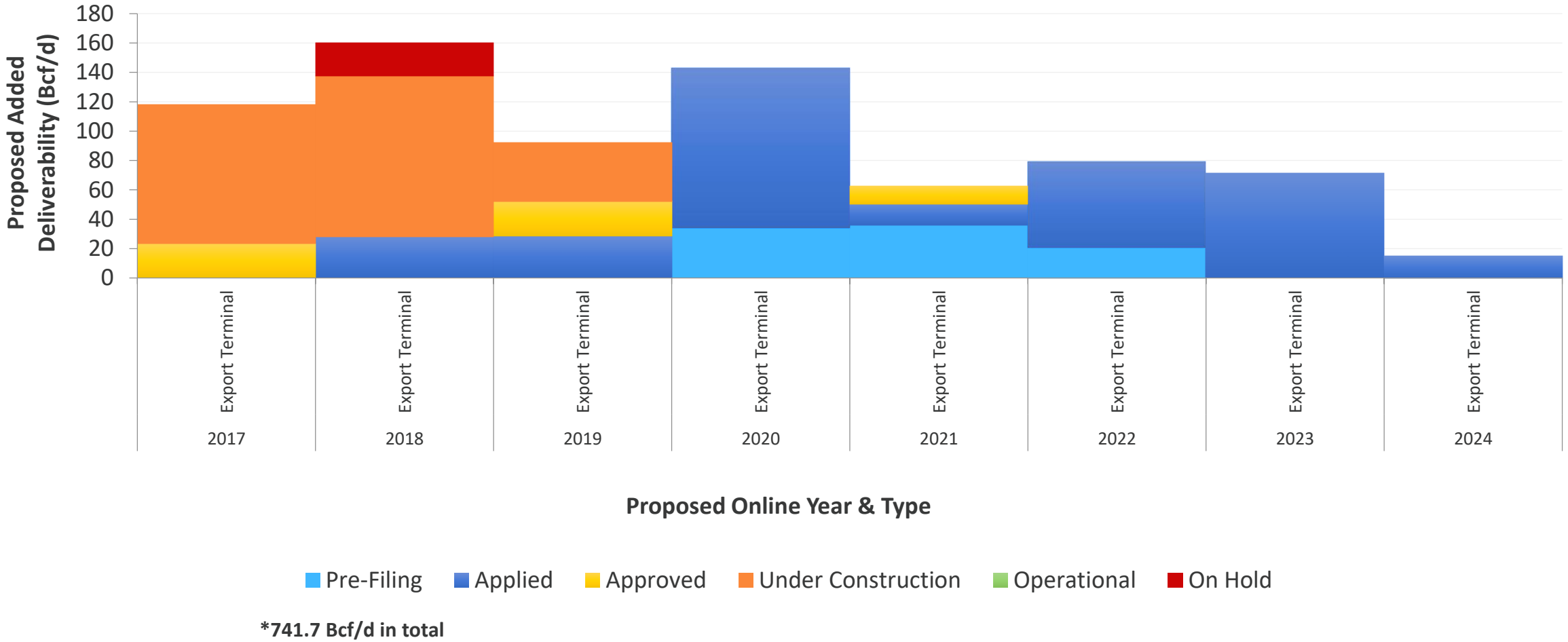
- In the age of abundant natural gas, many entities have decided to pursue construction of liquefied natural gas (LNG) export facilities. The volumes of gas utilized by these facilities represent a major domestic end use source and price driver.
- Unlike other fuel projects that are domestic use only, LNG terminals trigger advance consideration of international markets, utilization planning, and contracts prior to development.

Typical Project Timeline for New Liquefied Natural Gas Terminal



Source: FERC timeline: Traditional vs. Pre-filing. [Online] n.d. [Cited: November 19, 2014]. Adapted from http://www.fs.fed.us/specialuses/documents/im2003-197attach3.pdf.

Status of Proposed Liquefied Natural Gas Projects

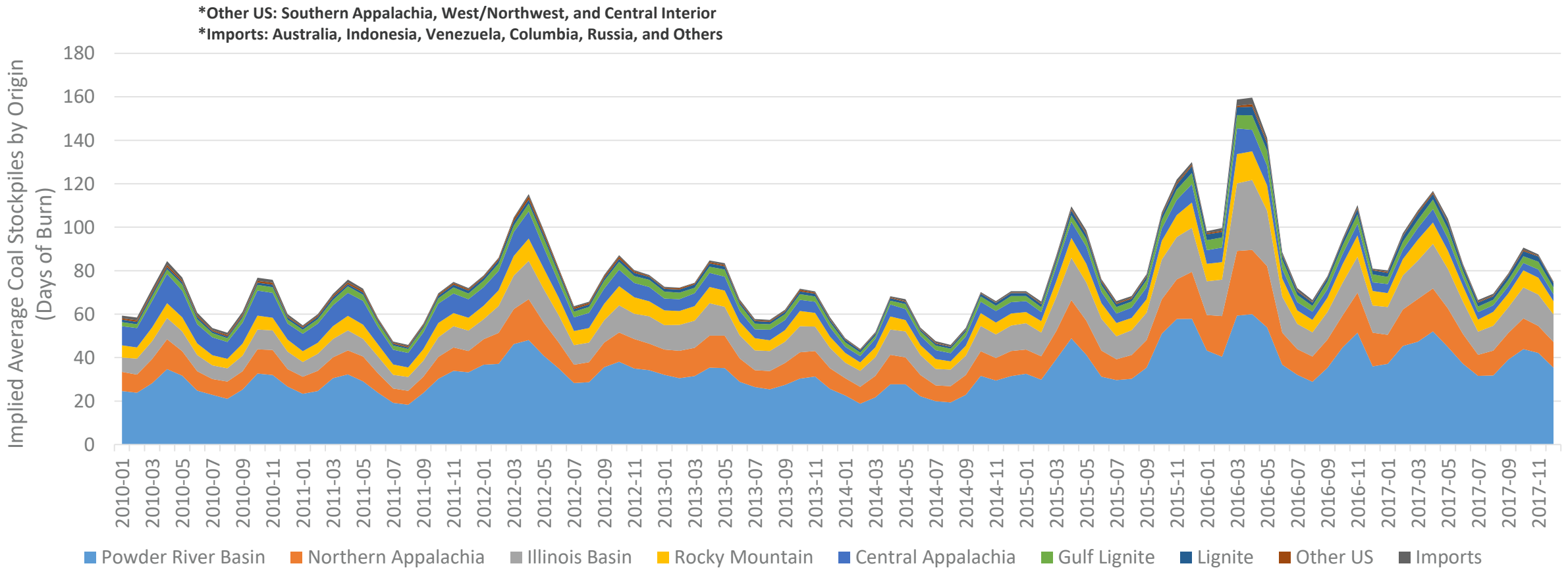


***741.7 Bcf/d in total**

Fuel Stockpiles Supplement

- Unlike natural gas and some other liquid fuels that are utilized by the power sector, a large quantity of coal is continually maintained in on-site stockpiles at coal-fired power generators to ensure reliability and continued plant operation
- While natural gas is used for power, natural gas storage is primarily leveraged by pipeline operators and local distribution companies (LDCs) to ensure reliable pipeline pressures and to meet a regulated LDC utility's obligation to serve
- Petroleum product stockpiles are primarily used for market balancing

After reaching decade highs earlier this year, utility coal stockpiles have returned to near decade average



$$Days\ of\ Burn[DoB] = \frac{2x10^3 * \sum ImpliedRegionalStockpiletonnage_t * \overline{RegionalPurchaseHeatContent_t}}{\sum SeasonalRegionalCoalFleetCapacity_t * \overline{SeasonalRegionalCoalFleetCapacityFactor_t} * \overline{RegionalCoalFleetHeatRate_t} * hours_t}$$

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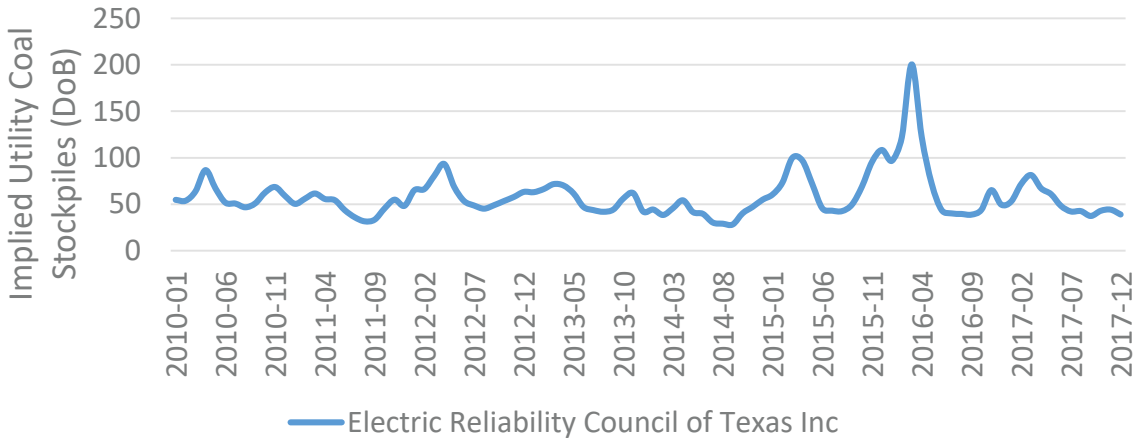

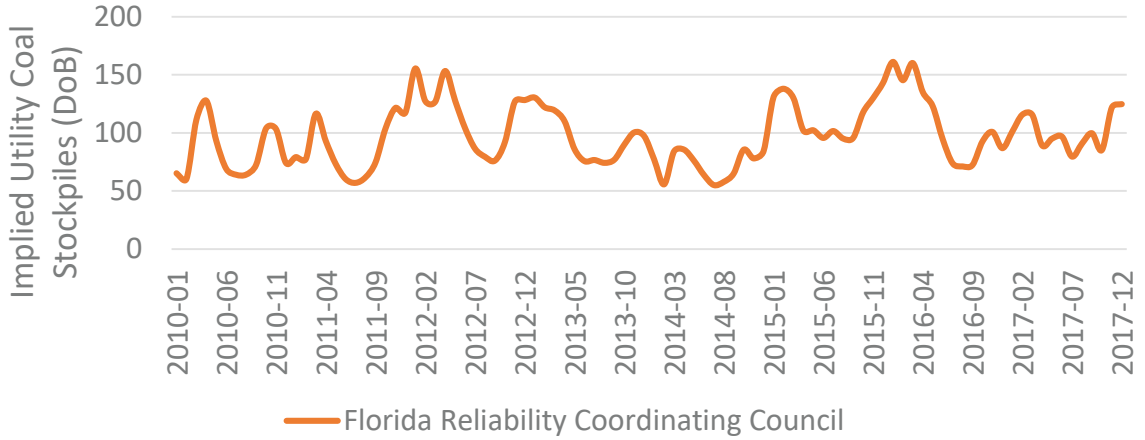

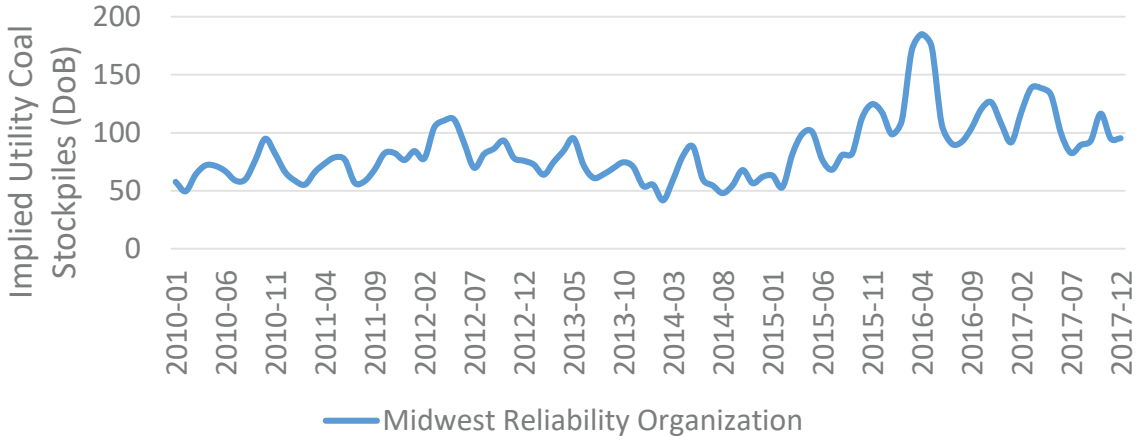

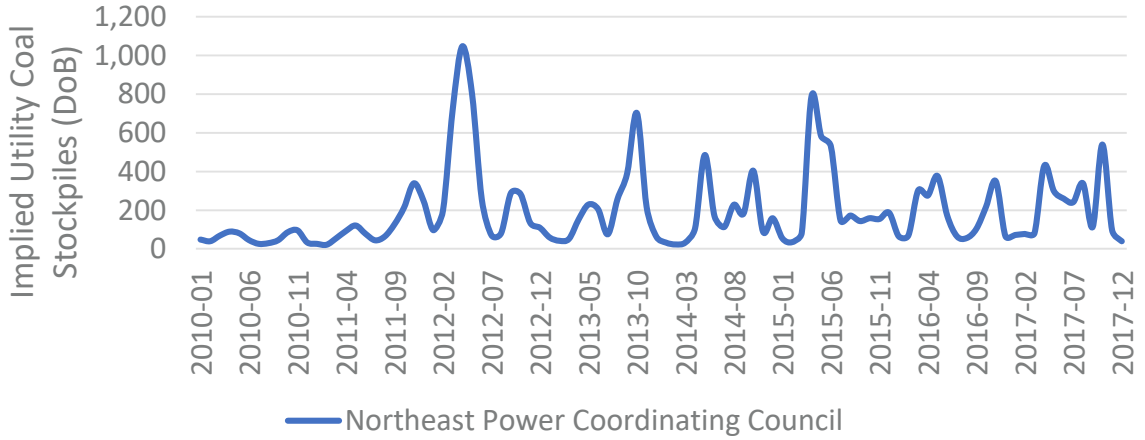

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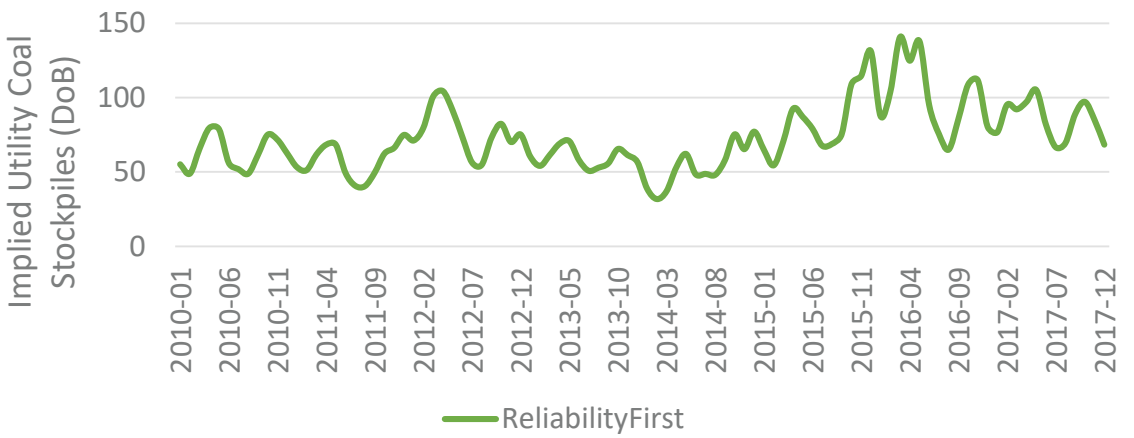
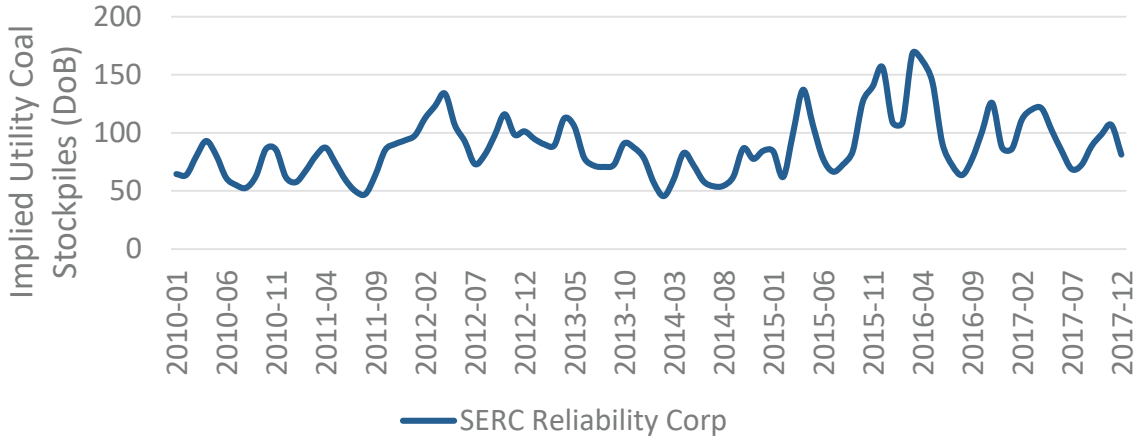
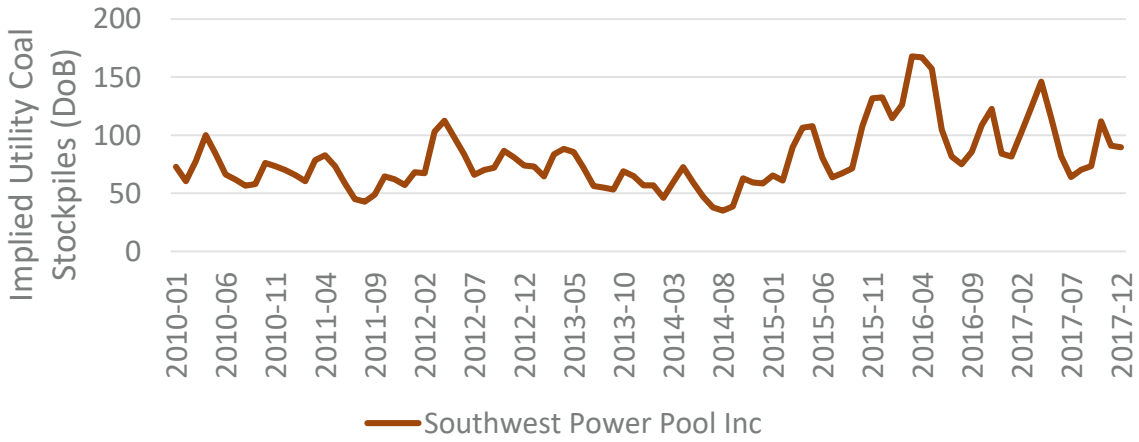
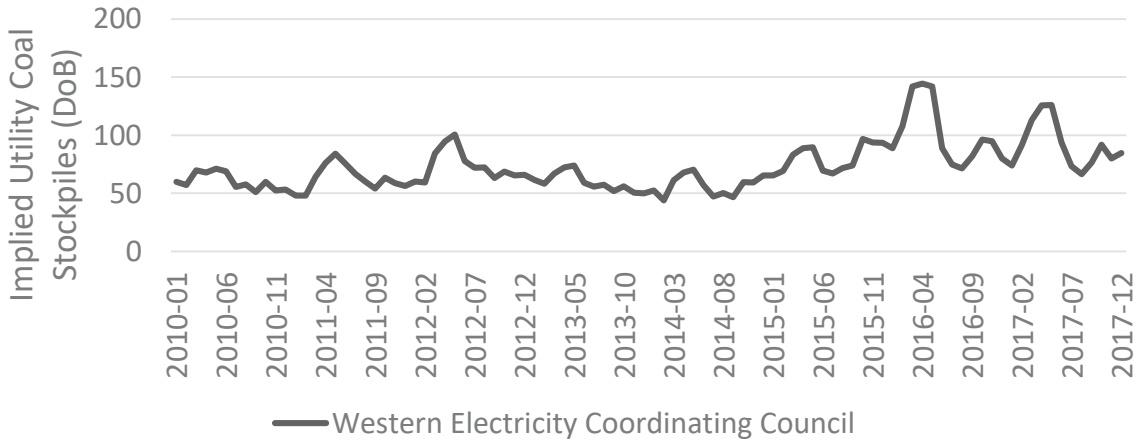
Derived from: ABB Velocity Suite Monthly Plant Estimated Coal Stockpile & Monthly Plant Coal Transactions & Costs Intelligent Queries through December 2017 (12/31/2017)

After reaching decade highs earlier this year, utility coal stockpiles have returned to near decade average









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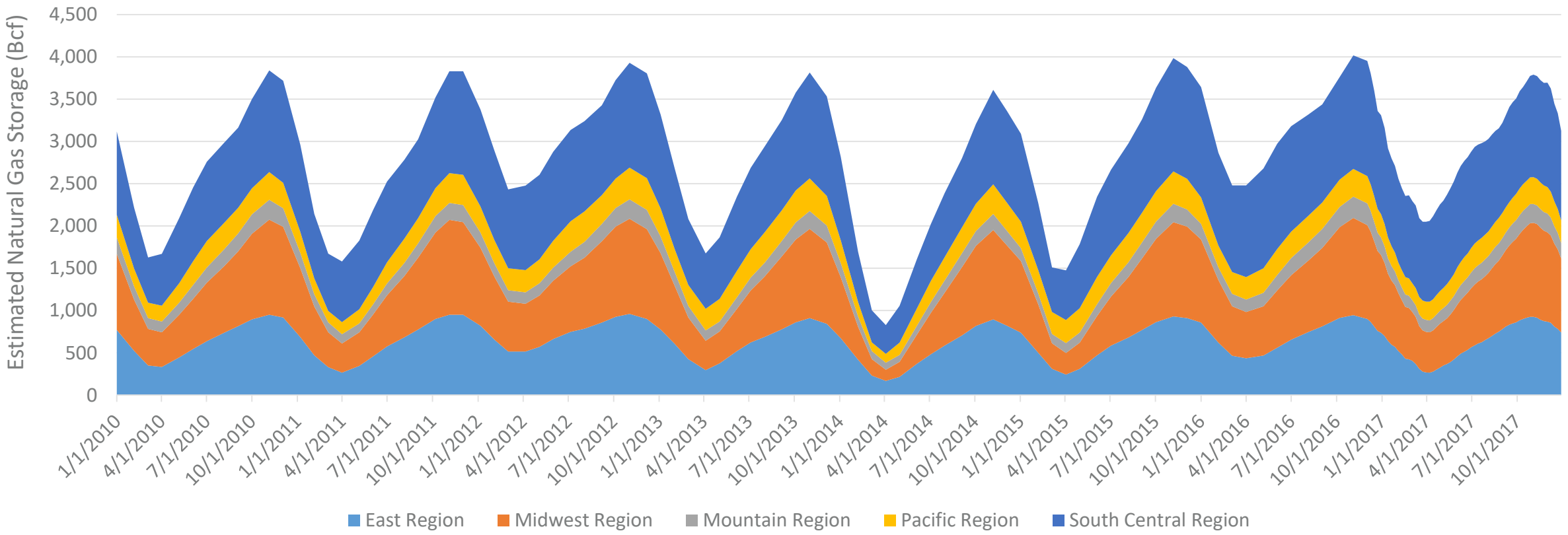
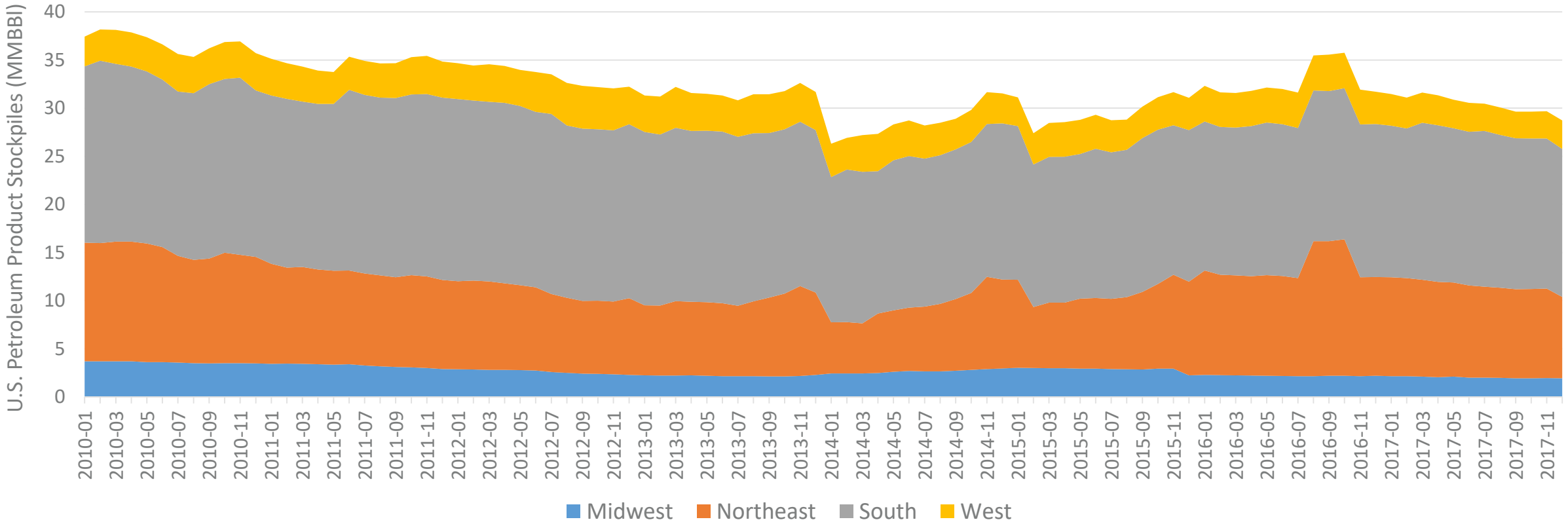
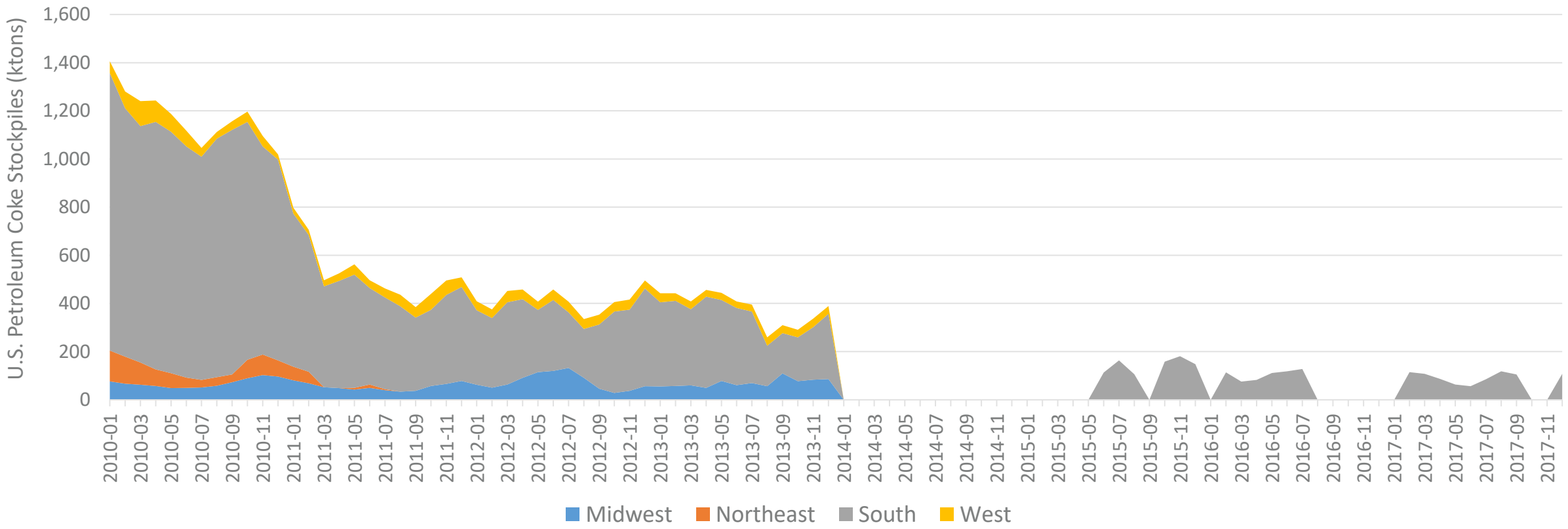
Natural gas storage levels remain high, but are lower than last year's decade high

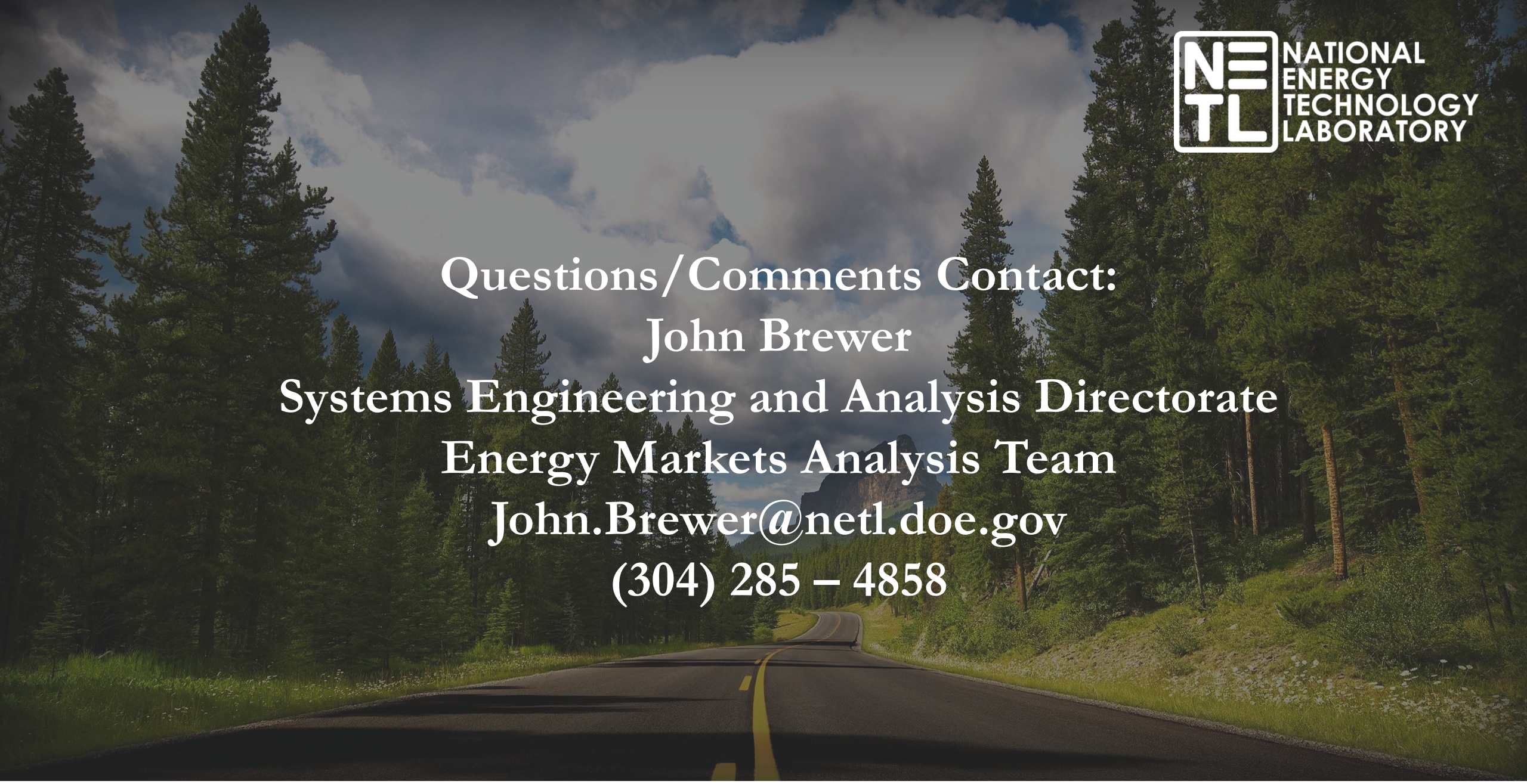


U.S. petroleum stockpiles have fallen by about 25% since the start of the decade



Petroleum coke stockpiles have become essentially non-existent compared to the beginning of the decade





NATIONAL ENERGY TECHNOLOGY LABORATORY

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