New Jersey's Clean Energy Transition: Economic Impacts

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Economic and Policy Analysis of Energy, Environment and Equity

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- AEC's clients are primarily public interest organizations—non-profits, government agencies, and green business associations—who work on issues related to AEC's areas of expertise.

- AEC works proactively to support and promote diversity in our areas of work by providing applied, on-the-job learning experiences to graduate students.

- AEC is committed to a just workplace that is diverse, pays a living wage, and is responsive to the needs of its eight full-time and seven part-time staff.

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Overview

Forthcoming reports:

Economic Impacts of a Clean Energy Transition in New Jersey. June 2022. Available at: https://aeclinic.org/publicationpages/2022/06/07/economic-impacts-of-a-clean-energy-transition-in-new-jersey

Barriers and Opportunities for Green Jobs in New Jersey. June 2022. Available at: https://aeclinic.org/publicationpages/2022/06/07/barriers-and-opportunities-for-green-jobs-in-new-jersey

1. Barriers and opportunities
2. Economic impacts of a clean energy transition in New Jersey
3. Questions and discussion

Barriers and Opportunities

Core benefits of a clean energy transition

Because a clean energy transition…	it will…	by…
Invests in clean energy industries	Create job opportunities	Generating safe, quality career options
Reduces air and water pollution	Protect the environment	Curbing contamination of natural ecosystems
Minimizes the use of fossil fuels	Improve public health and safety	Decreasing the risk of chronic illnesses

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Conditional benefits of a clean energy transition

If a clean energy transition…	it can…	by…
Prioritizes community input start-to-finish	Redress historical inequalities	Providing opportunities and resources for all
Employs flexible resources	Lower energy bills	Reducing peak demand and transmission costs
Uses sustainable community microgrids	Enhance grid resilience	"Islanding" from the larger electric grid
Strategically sites clean energy resources	Optimize land use	Repurposing "brownfields" for development
Focuses on the needs of every community	Expand transportation options	Creating accessible and safe modes of transport

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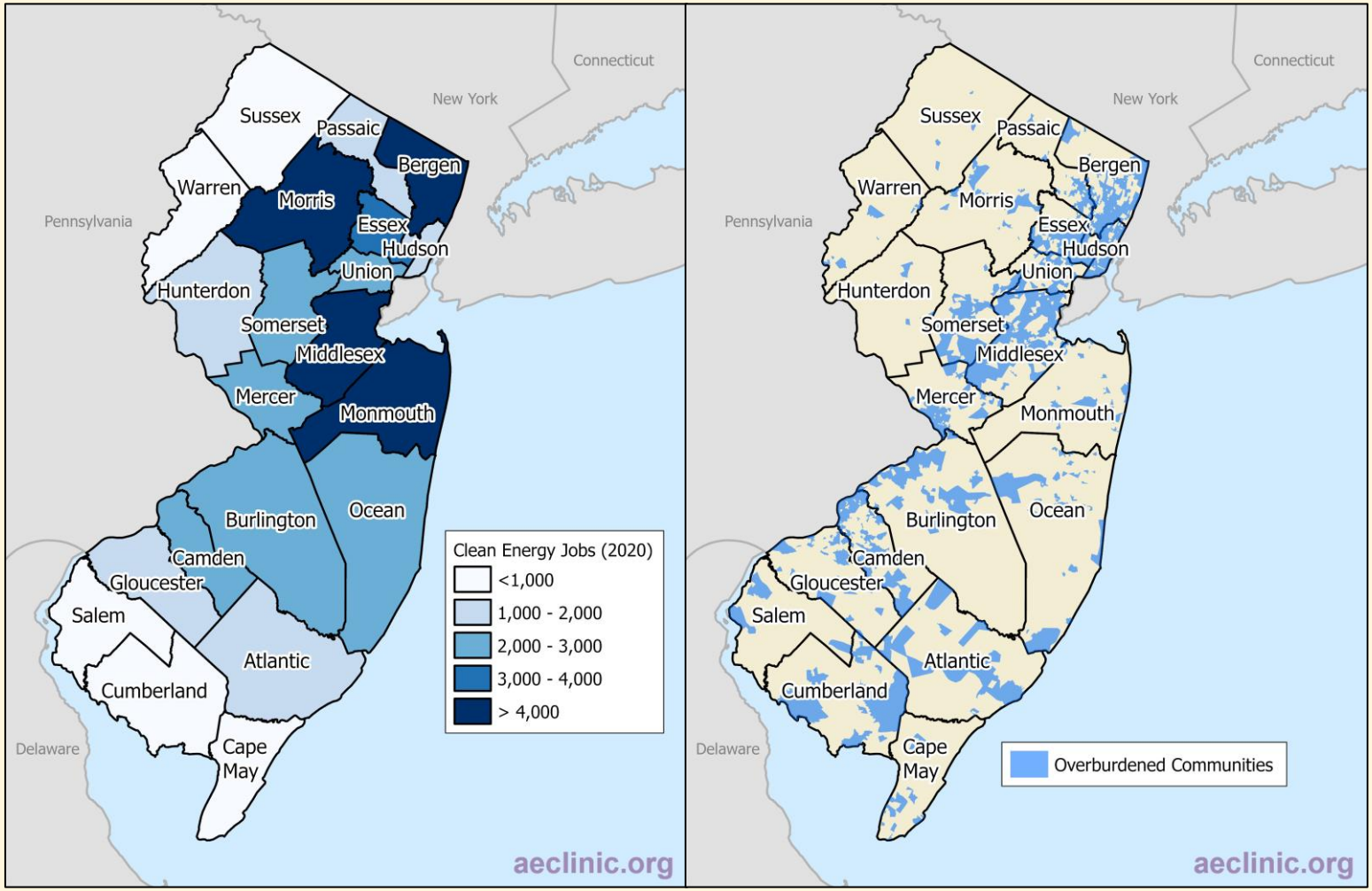
Clean energy jobs and overburdened communities in New Jersey



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Opportunities in the clean energy job sector

Clean energy jobs have:

1. good pay,
2. good opportunities for new employees, and
3. low education and training barriers.

The State of New Jersey should work to shape policy and regulations to enhance the equity, diversity and inclusion of its clean energy jobs.

New Jersey's green jobs are disproportionately filled by white men

	White*		Black		Asian		Other (incl. Native Americans)		Two or More Races		Hispanic/ Latinx		Women	
	NJ	US	NJ	US	NJ	US	NJ	US	NJ	US	NJ	US	NJ	US
Population (%)	55%	60%	15%	13%	10%	7%	1%	1%	2%	2%	21%	18%	51%	48%
Clean jobs (%)	62%	61%	9%	8%	7%	8%	2%	2%	7%	8%	16%	17%	25%	27%

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Summary of barriers to green jobs

Types of Barriers	Definition	Examples
Educational/ Experience	Lack of a desired level of educational attainment and/or relevant work experience or training	Prohibitively expensive training programs, apprenticeship placements occurring through informal recommendations
Logistical	Lack of awareness, access, or ability to participate	Lack of transportation/internet access, limited English proficiency, lack of affordable, quality childcare and/or healthcare
Equitable Access	Underrepresentation of historically marginalized communities in clean energy jobs plus discrimination, prejudice, and bias	Resume gaps for formerly incarcerated individuals, hiring obstacles for unhoused individuals, lack of necessary credentials among undocumented individuals
Institutional	Lack of workplace policies and procedures that result in an unsafe and/or inequitable workplace environment	Clean energy employers often do not prioritize addressing a lack of diversity and lack policies to enhance diversity

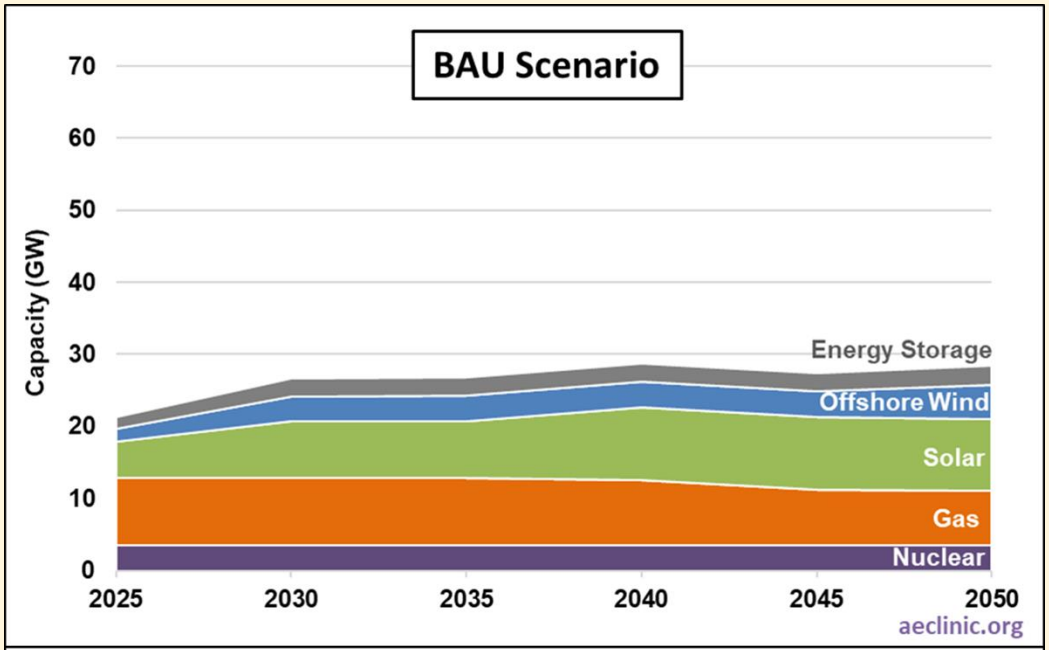
Economic Impacts

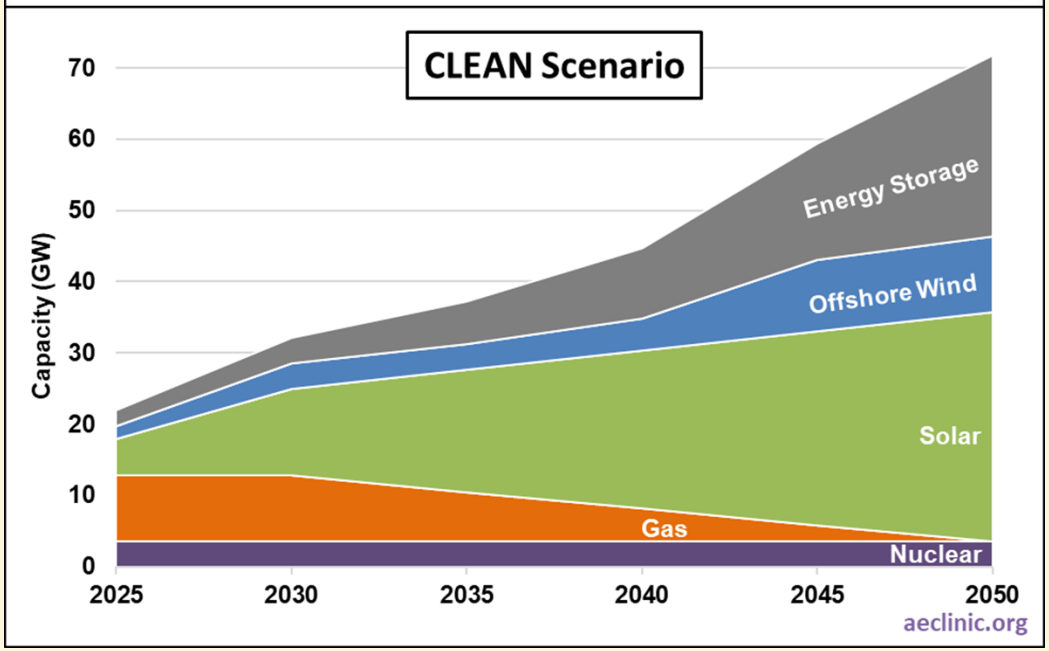
Modeling New Jersey's clean energy transition

- **BAU:** "Business-as-usual" scenario represents existing state policies and targets but does not meet New Jersey's Global Warming Response Act (GWRA) emission reduction goals. (Based on the EMP's "Reference 2".)
- **CLEAN:** "Clean Energy Transition" scenario represents clean energy transition measures across the electric, buildings, and transportation sectors that meet New Jersey's energy and climate goals of achieving 100 percent clean electric supply by 2050 and the GWRA goal of an 80 percent reduction in statewide greenhouse gas emissions (relative to 2006 levels) by 2050. (Based on EMP's "Least Cost" scenario with a few updates.)

Electric capacity in GW

Energy storage and renewable energy resources are added to the system to replace the retired gas-fired capacity and make up for the increased electric demand caused by electrification in the buildings and transportation sectors.





Both scenarios also have electric capacity from "onshore wind" (7 MW) and "other" (less than 300 MW).

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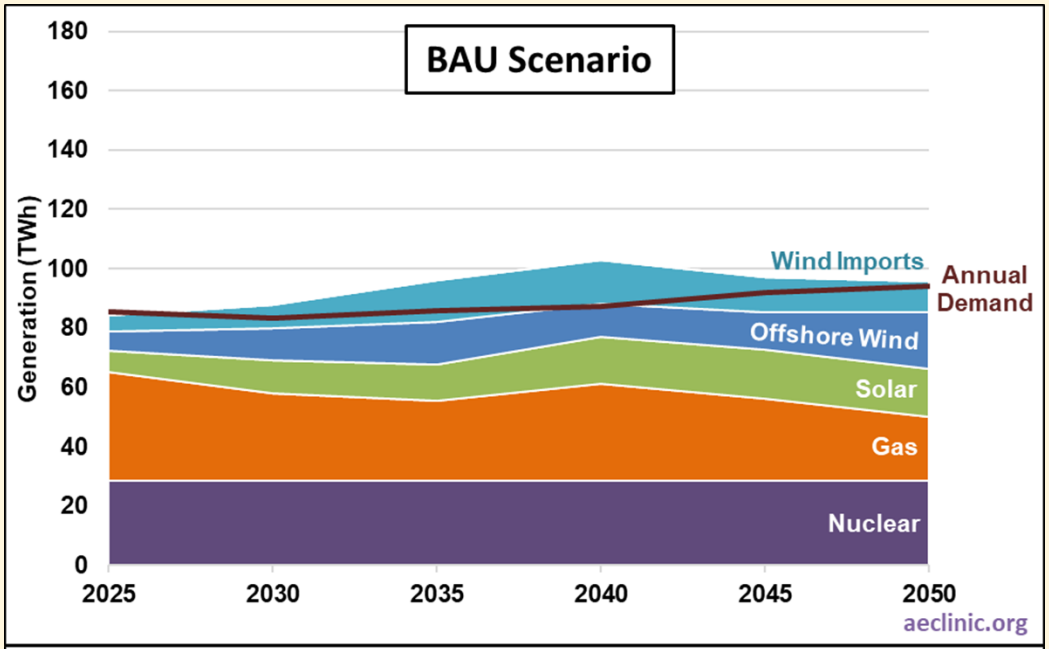
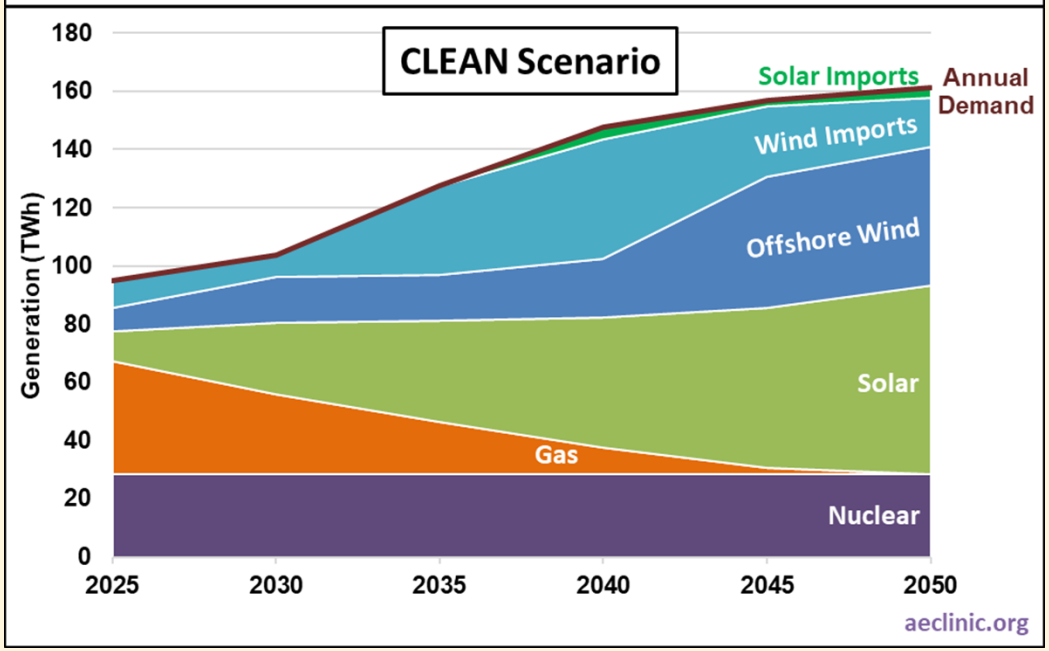
Electric generation in TWh

Customers' annual demand for electricity nearly doubles from 2025 to 2050, along with the electric generation needed to support it.
In both scenarios, wind and solar generation imported from out of state is needed to supply sufficient generation to meet demand.





The BAU scenario includes 1,310 GWh of gas imports in 2025 and solar imports between 85 and 153 GWh between 2030 and 2050. Electric generation from "onshore wind" and "other" is excluded due to a lack of generation data.

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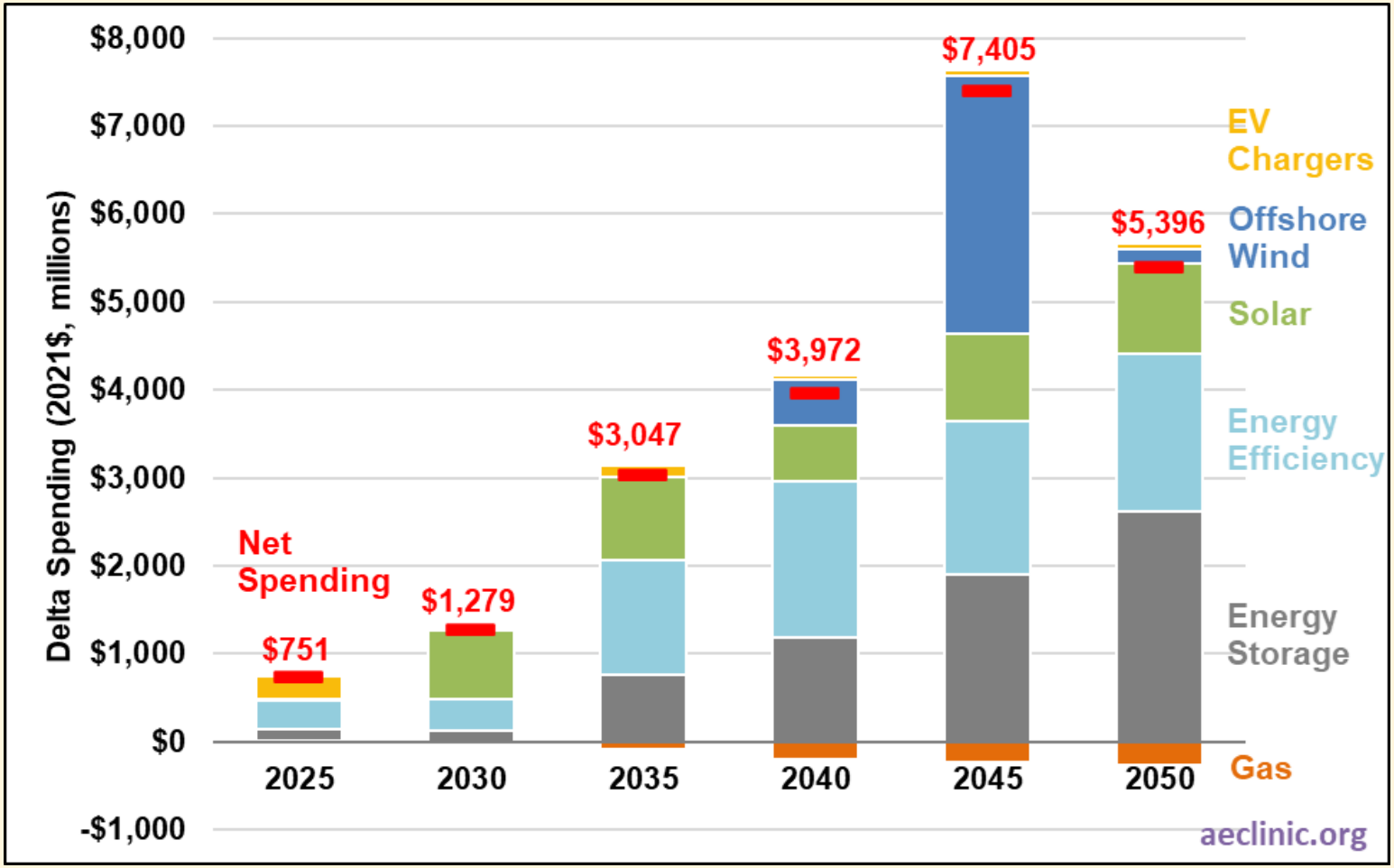
Understanding the modeling results…

- **Deltas –** The "extra" or difference between two scenarios.
- **Job –** Employment or jobs are in full-time equivalents (FTEs), which translates to 2,080 hours of work per year.
- **Job-year –** The number of "jobs per year" added up across multiple years (i.e., one job-year is the equivalent of one person working full-time for one year).
- **Cumulative –** The total impact over a specified time period, commonly measured in "job-years".
- **Annual –** The impact realized in a single year, commonly measured in "jobs per year".

Delta net spending by resource type



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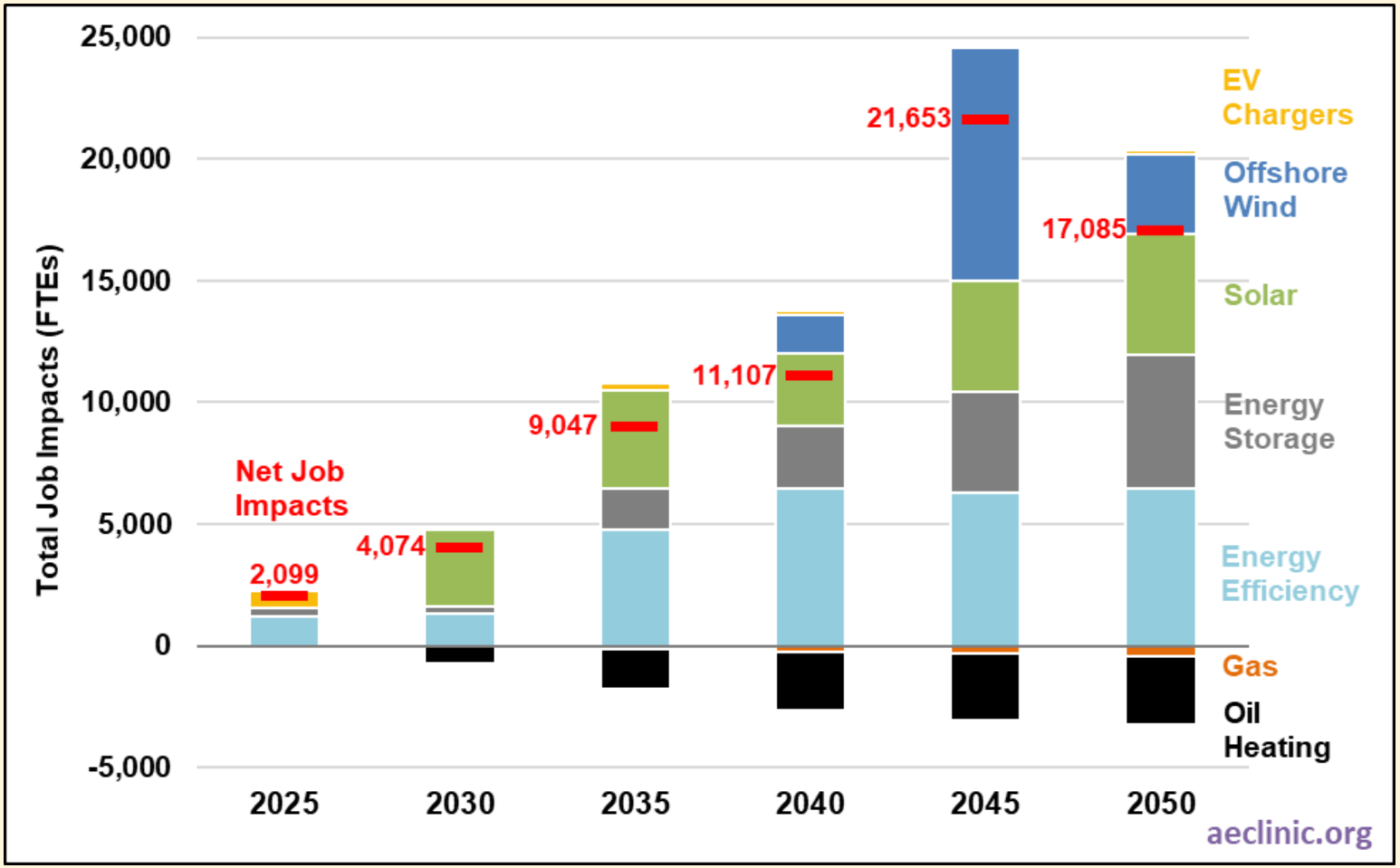
Delta annual FTE job impacts



Employment or jobs in this report are in full-time equivalents (FTEs), which translates to 2,080 hours of work per year. IMPLAN does not differentiate between "permanent" and "temporary" employment—jobs are reported in the year that they exist.

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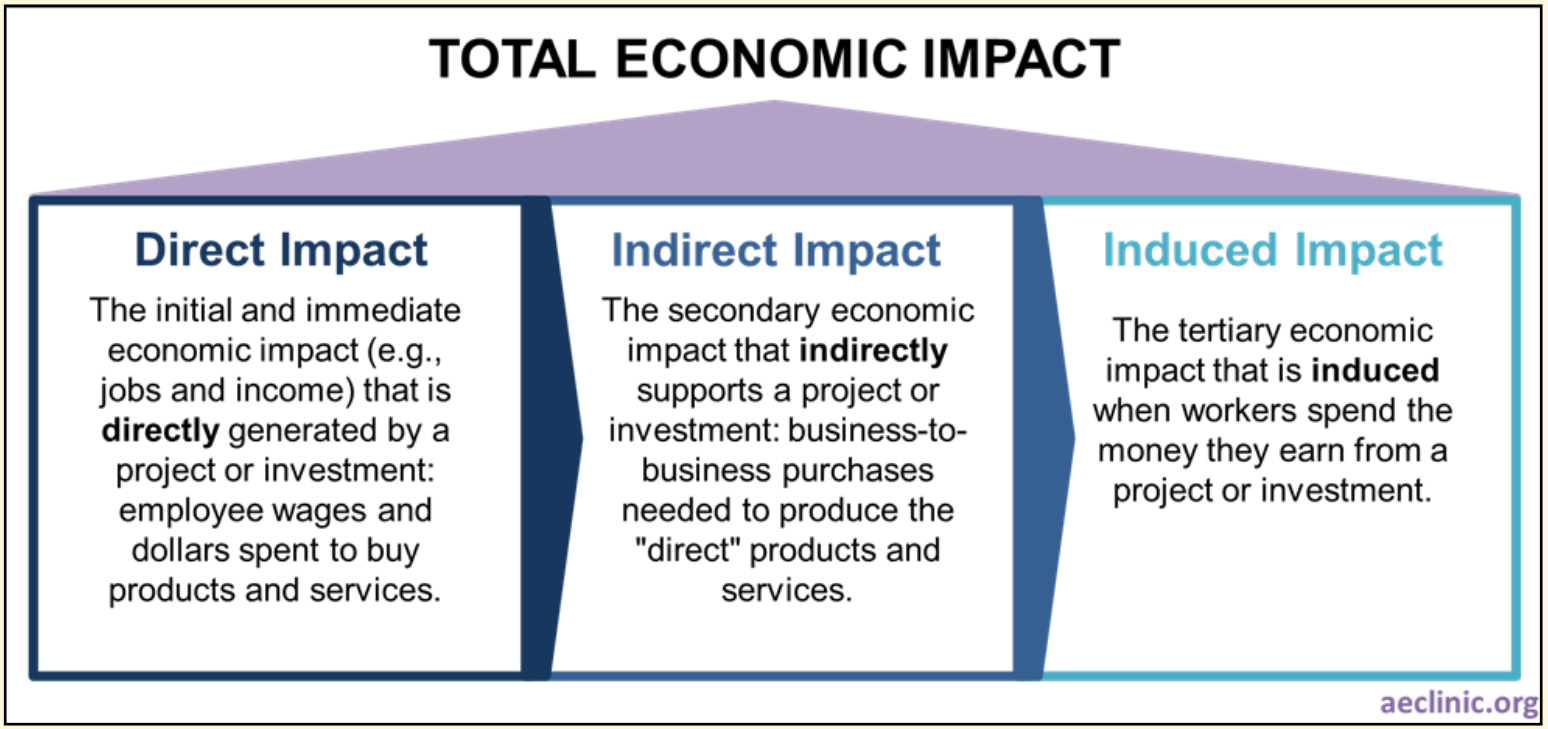
Types of economic impact



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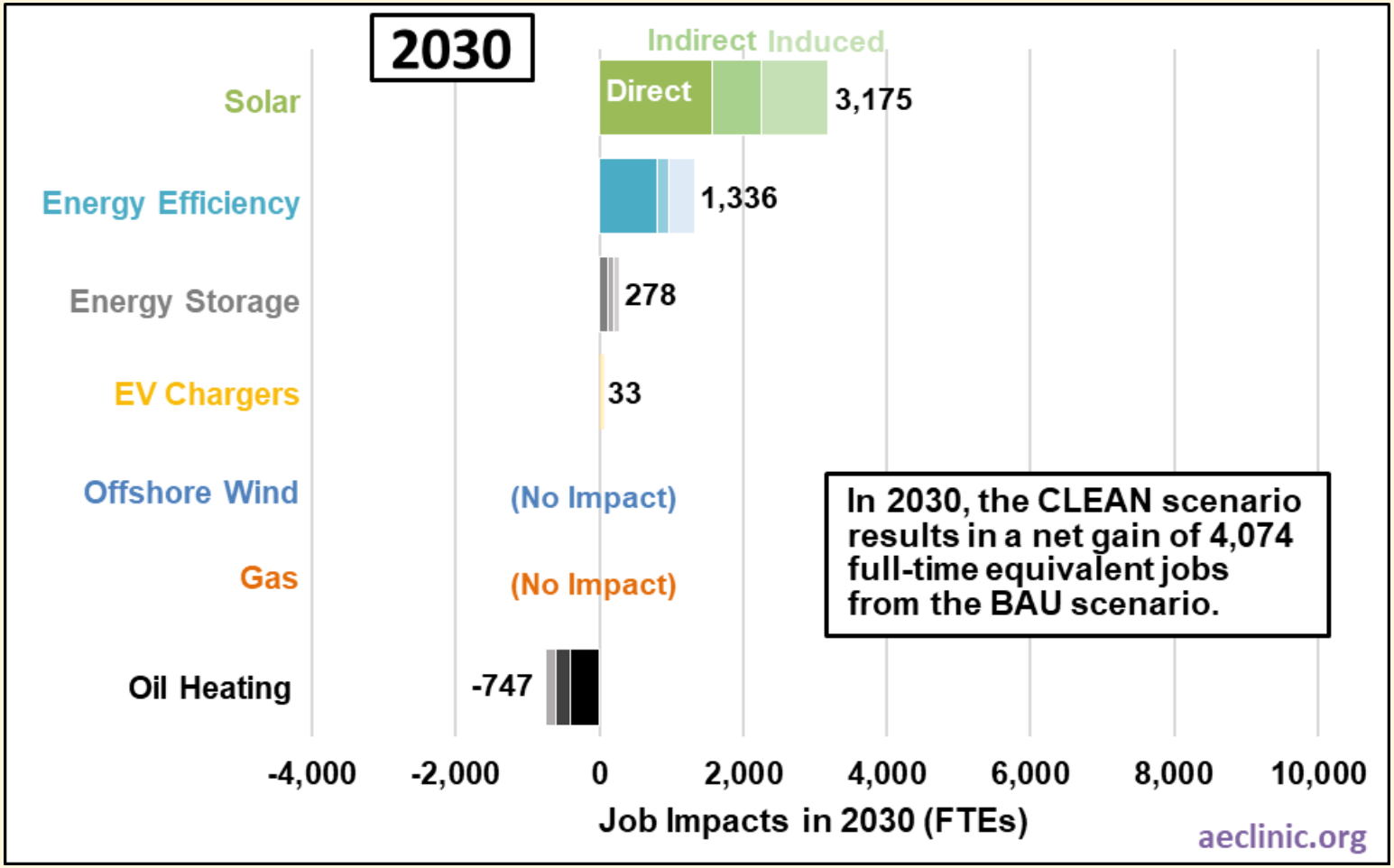
Delta annual net job impacts in 2030



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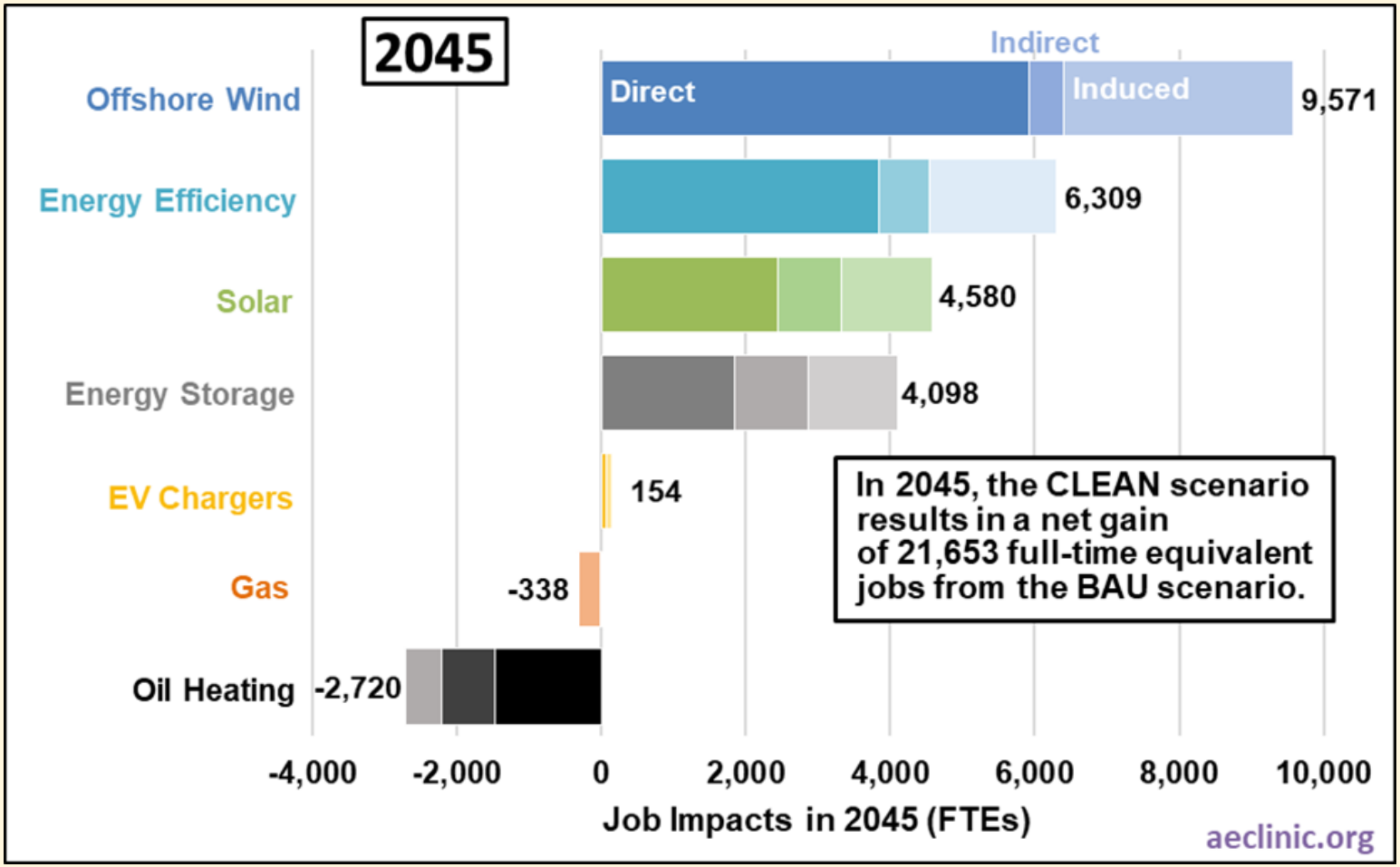
Delta annual net job impacts in 2045



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Delta cumulative job impacts, 2025 to 2050

On average, an additional 11,000 jobs per year are created by New Jersey's clean energy transition.

Cumulative Job Impacts 2025-2050	Full-time equivalents (FTEs) in job-years			
	Direct	Indirect	Induced	TOTAL
Energy Efficiency	71,347	13,309	32,691	**117,348**
Solar	46,556	17,412	24,844	**88,812**
Offshore Wind	41,031	2,596	22,022	**65,649**
Energy Storage	27,224	14,965	18,353	**60,541**
EV Chargers	2,455	181	3,138	**5,774**
Gas	-360	-4,538	-312	**-5,210**
Oil Heating	-24,728	-12,622	-8,604	**-45,954**
TOTAL	**163,526**	**31,302**	**92,132**	**286,960**

A "job-year" is the number of "jobs per year" added up across multiple years (i.e., one job-year is the equivalent of one person working full-time for one year). For example, a worker that has the same full-time job for 5 years has one job but 5 job-years.

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Caveats

Job gains and losses not quantified

- Gas station jobs
- Public transit jobs
- Transmission line jobs
- Gas plant retirement jobs
- Gas distribution system jobs
- Job categories that do not exist in New Jersey

Other key caveats

- AEC excludes the use of biogas and need for new gas buildout by adding additional battery storage capacity.
- See methodology in *Economic Impacts* report for a full description of methods and assumptions.

Questions?

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Thanks!

Appendix

Net annual impacts (jobs, state GDP, labor income) in the CLEAN scenario less the BAU scenario

Total Impacts	Impact Type	2025	2030	2035	2040	2045	2050
Jobs *(FTEs)*	Direct	1,105	2,122	4,969	6,447	12,629	9,792
	Indirect	204	697	1,233	1,122	2,025	1,770
	Induced	790	1,255	2,845	3,539	6,999	5,523
	Total	**2,099**	**4,074**	**9,047**	**11,107**	**21,653**	**17,085**
State GDP *(2021$, millions)*	Direct	$164	$243	$574	$742	$1,754	$1,284
	Indirect	$29	$83	$140	$99	$215	$186
	Induced	$92	$135	$301	$361	$769	$589
	Total	**$285**	**$461**	**$1,014**	**$1,203**	**$2,739**	**$2,059**
Labor Income *(2021$, millions)*	Direct	$116	$231	$522	$690	$1,474	$1,117
	Indirect	$18	$52	$89	$66	$143	$119
	Induced	$52	$77	$171	$205	$437	$335
	Total	**$187**	**$359**	**$782**	**$961**	**$2,054**	**$1,571**

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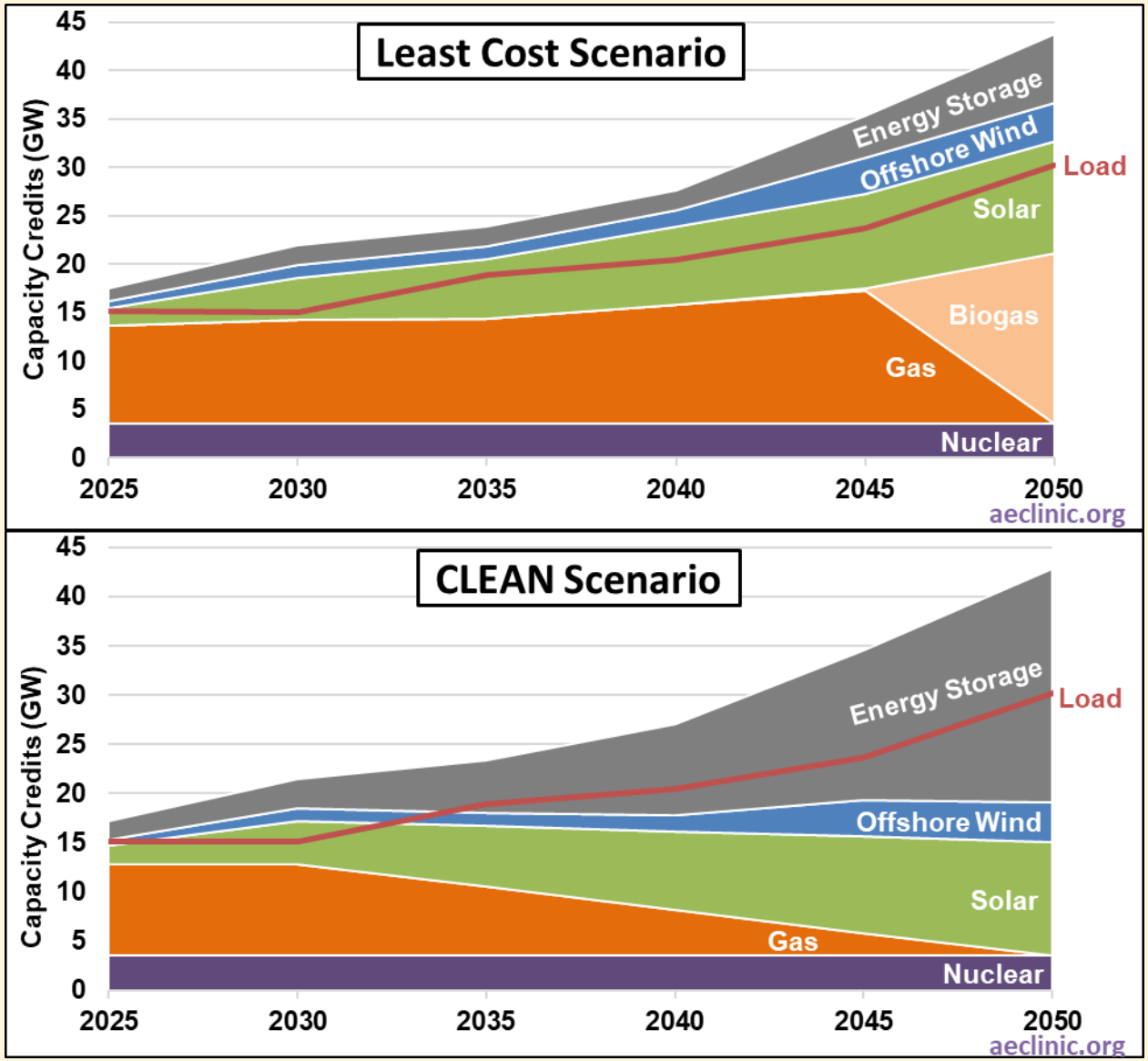
Adjustments to 2019 EMP's "Least Cost"



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