

Utah's Energy Economy

April 25, 2022



INFORMED DECISIONS™

The Energy Transition

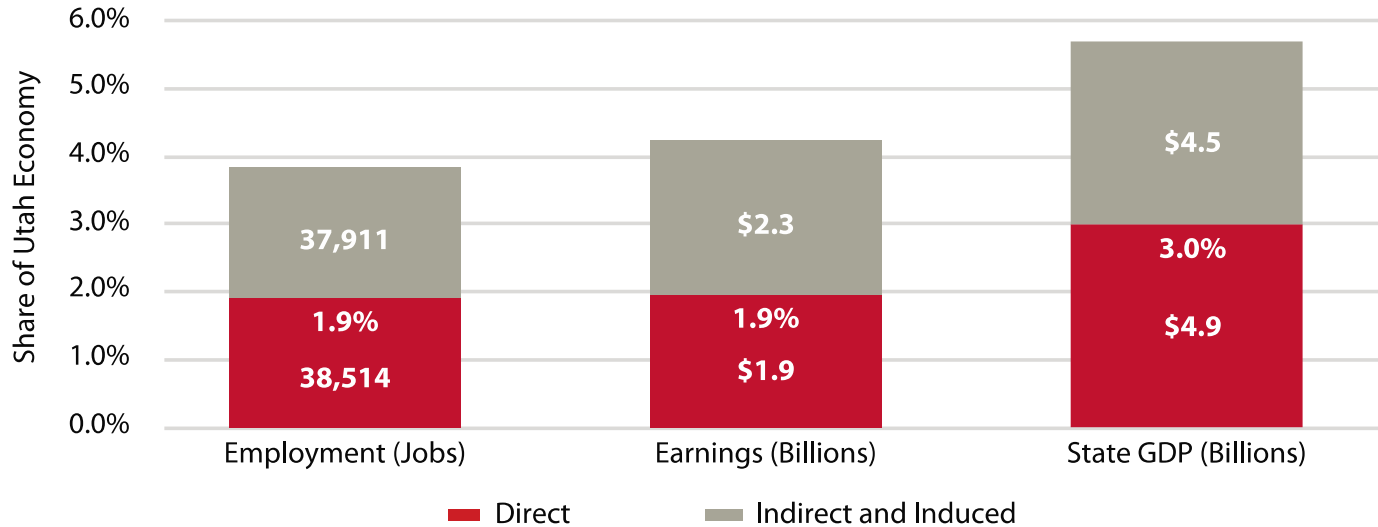
Metals, coal, crude and natural gas-powered Utah's economy over the last century.

1. Intermountain Power Project (1985) exports electricity to California.
2. Utah's own electricity requirements are generated by a mix of coal (60%), natural gas (25%), and renewable energies (15%).

Renewable energies will drive Utah's future economy.

1. Hydrogen and natural gas will replace coal in electricity-generation plants.
2. Renewable energies (wind, solar, hydro, geothermal) will grow as battery storage elevates them to base-load energy status.

Utah Energy Industry Economic Impacts (2017)



Sources: Gardner Policy Institute report
(February 2020)

Utah Energy Employment by Sector (2017)

Sector	Direct Jobs
Energy Efficiency	14626
Rooftop and Utility-Scale Solar	5862
Turbine, Transformer, Solar Equipment Manufacturing	250
Oil and Gas Development and Production	7999
Electricity Distribution	2602
Energy Distribution	1710
Coal Mining	1496
Electricity Generation	1290
Oil and Gas Refining	1223
Energy Trade	809
Mining Machinery Manufacturing	601
Uranium Milling	46
Total	38514

Sources: Gardner Policy Institute report
(February 2020)

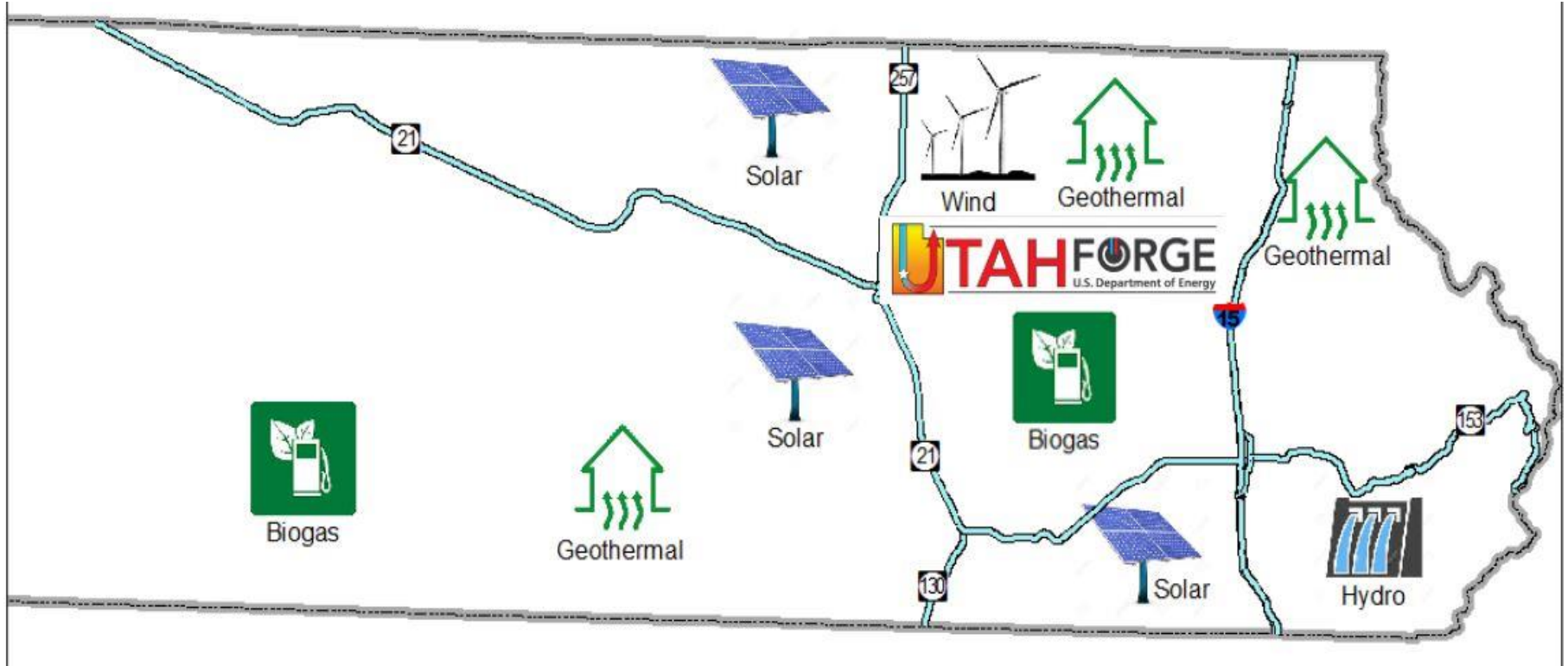
Energy's Contribution to Utah's Economy (2017)

<u>Sectors</u>	<u>Direct Employment (Jobs)</u>	<u>Direct Earnings Impact (\$B)</u>
Food Retailers	189,043	6.7
Health Care	146,290	10.9
Finance / Banking	138,597	8.0
Technology	118,621	9.5
Hospitality / Tourism	82,100	2.7
Transportation	73,990	4.5
Energy	38,514	1.9
Real Estate / Residential Construction	29,004	1.7
Agriculture	22,224	0.3

Sources: Gardner Policy Institute report
(February 2020)

Beaver County

A Utah Example of Energy Transition



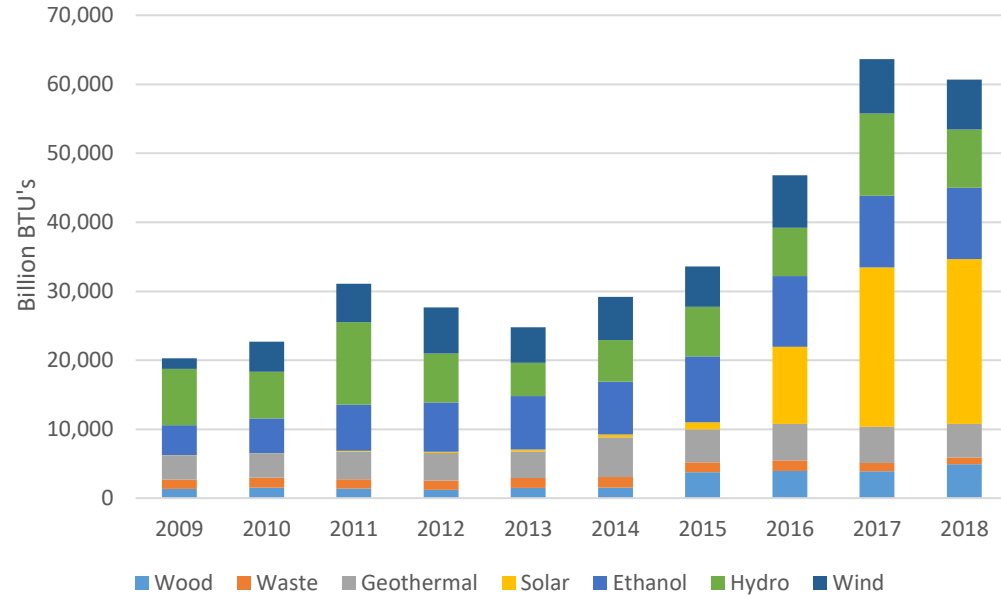
Source: Beaver County Economic Development Office

Beaver County Electricity Generation (2018)

Company Name	Energy	Megawatts	Year Built
Beaver City	Hydroelectric	4	1908
Rocky Mountain Power	Geothermal	28	1984
Cyrq	Geothermal	10	2006
Longroad	Wind	306	2008
Montrose	Biogas	5	2011
Enel	Geothermal	25	1990, 2012
Dominion Energy, Longroad	Solar	458	2014
Utah FORGE R&D Laboratory	Geothermal		2019
	TOTAL MW	836	Power for 250,800 homes

Source: Beaver County Economic
Development Office

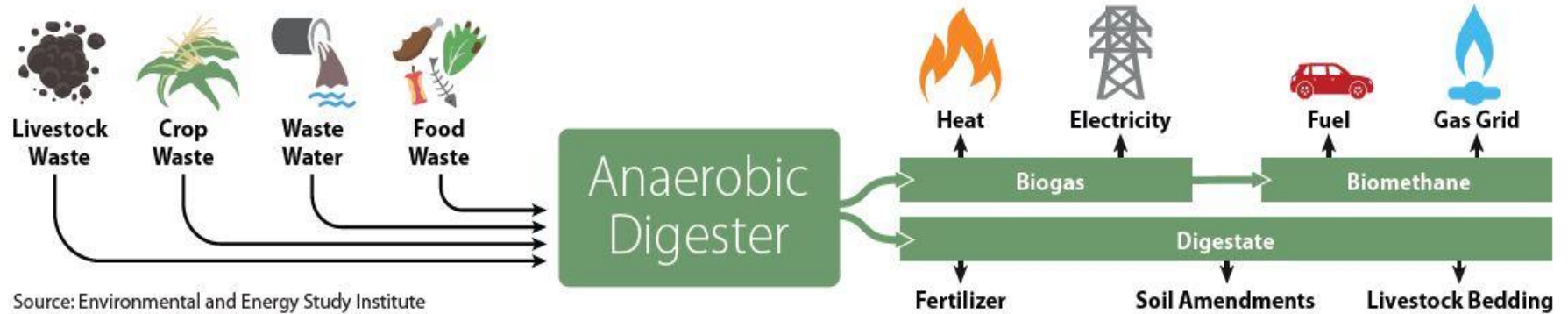
Utah's Renewable Energy Production Tripled (2009-2018)



Source: Utah Geological Survey, Energy and Mineral Statistics

Waste Streams Processed into Energy

Anaerobic Digestion Process



Source: Environmental and Energy Study Institute

Sources: Gardner Policy Institute report
(January 2022)

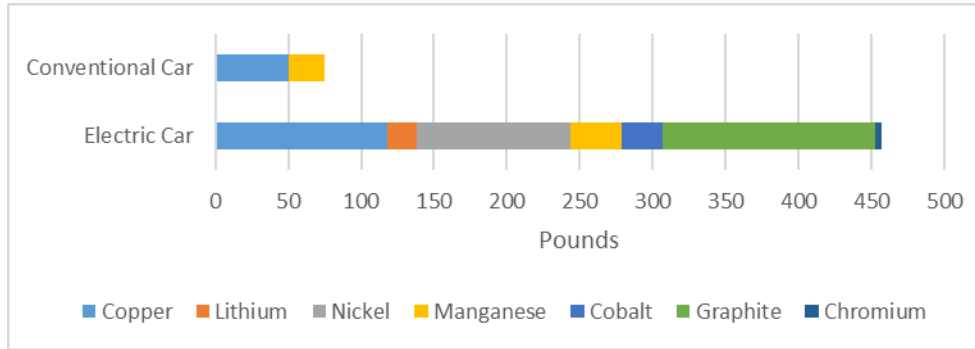
Converting Utah Waste Streams into Energy

Source		Annual RNG Feedstocks	Potential Renewable Natural Gas (billion cubic feet / year)	Range of Feedstock Carbon Intensity (g CO ₂ e/MJ)
Animal Manure	Swine - 1MM	1.2MM tons manure	3.7	(525)-(150)
	Cows - 95,000	2.6MM ton manure		
Landfill Gas	8 landfills	2.6 billion ft ³ biogas	1.0	40-80
Wastewater	2 facilities	92,000 gallon sludge	0.7	10-80
Food Waste	Wasatch RR	1MM ton food waste	2.7	(25)-0
Total Utah RNG Production			8.1	
Utah Natural Gas Demand in 2020			211.6	

Sources: Gardner Policy Institute report
(January 2022)

Clean Energy Technologies Use More Minerals

Mineral Weight in an Electric Car is about 400 pounds more than a Conventional Car



Source: International Energy Administration)

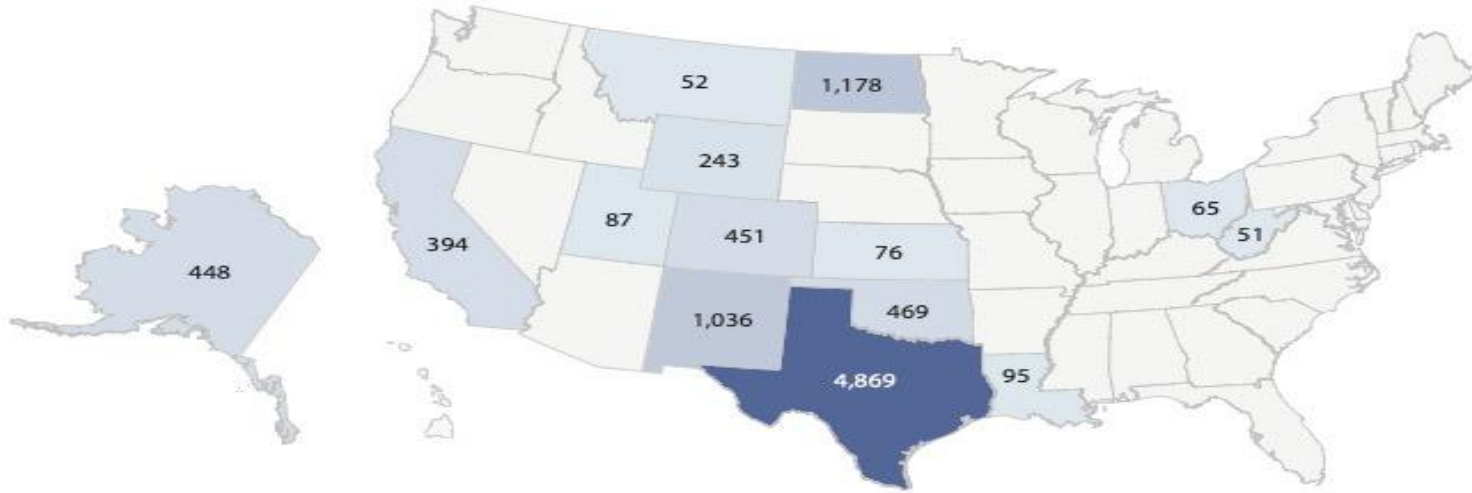
Utah's Mining Tradition is Strong (2020)

Mineral	Production	Location
Copper	417 MM tons per annum	Bingham Canyon Mine
Lithium	By-product of magnesium recovery in Great Salt Lake brine	Great Salt Lake
Nickel	Less than 100 tons per annum	Wells Canyon Nickel and Clay Pits
Manganese	Less than 100 tons manganese ore per annum	Manganese King Mine in Kane, Utah
Cobalt	By-product in copper and uranium deposits	Copper Ridge in Grand County

Source: Utah Geological Survey

Utah Crude Oil Production

Thousands of barrels per day, 2020



Source: Energy Information Administration

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