



empire state
greenhouses

A **CHOBE** Company



**Beyond Net Zero – Carbon Negative
Renewable Energy-Powered, NY Grown &
Certified Crop Factory in Cobleskill, New York**

**Mass-Producing up to 50 Types of Certified Organic Crops with an Emphasis on
Food Security**

240 East 47th Street | Suite 20D | New York, NY 10017

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Nexus Between Covid-19 & ESG

Covid-19 is exposing multiple fault lines:

- Before Covid-19, grocery stores accounted for 50% of US food sales with the balance being sold through wholesale channels to restaurants, schools, and institutions. This behavior has shifted to 95% grocery stores, but the supply chain has been unable to shift packaging and distribution from wholesale to retail;
- The lack of availability and affordability of food is evident by long lines at food banks/pantries and grocery stores juxtaposed with images of rotting food being dumped by growers' inability get them to distributors;
- Weakness in food transportation is exacerbated by increased demand given the vast distances food must travel (transportation links all aspects of the food supply chain) coupled with travel restrictions and measures intended to prevent the spread of the virus;
- The production of food has been severely impacted as farm workers face risk of infection. The closure of Smithfield Foods, a pork plant in South Dakota, represents 5% of the total US pork production. 783 of its employees contracted Covid-19 as of late April 2020;
- Labor shortages along every link of the food chain, particularly a shortage of truck drivers, impact the entire food supply chain, as does the pandemic's distancing and infection restrictions;
- Covid-19 has paralyzed global food production and distribution as ports are backed up and on the verge of shutting down. There is an insufficient number of workers to unload cargoes creating a logjam of containers and havoc at global ports. Fifty five percent of fresh fruit and ~31% of vegetables were imported, according to U.S. Department of Agriculture's Economic Research Service as of 2017.
- Whether imported from abroad or transported ~2500 miles from the West coast, the ability to grow food locally in biosafety-designed facilities will ensure access to out-of-season produce, reduce dependence on elongated national/global supply chains and result in a more sustainable operation that is "Beyond Net Zero – Carbon Negative."

Nexus Between Covid-19 & ESG

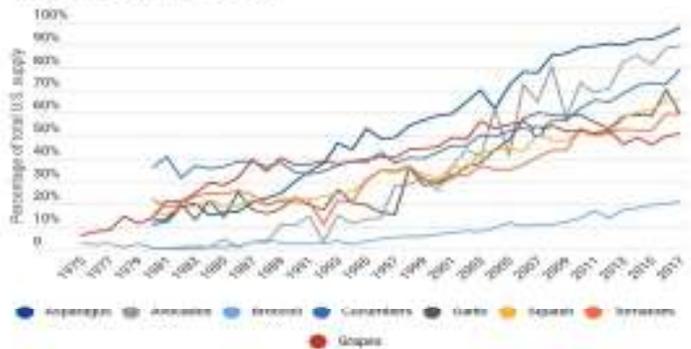
Covid-19 is exposing multiple fault lines in our food system including:

- In New York State, the demand for produce has surpassed that of meat. As John Catsimatidis, owner of New York's largest supermarket chain, said recently in a WSJ piece: "Ten years ago your produce departments did 7% of store sales and your meat departments 17%. Now they have flipped. Produce and vegetables are way up there; meat products are way down."
- Hygiene and packaging will be key factors in a post-pandemic food system environment. From the farm to the supermarket, there will be a greater emphasis on less handling of food from the beginning to the end of the supply chain so that the facility, the materials and the methodology of which food is packaged will become key factors in minimizing the potential spread of pathogens such as Covid-19.
- Despite the tragic situation resulting from Covid-19, ESG is confident about our focus and the timing of our project. We anticipate a heightened interest in food security, and a long-term advantage in the marketplace with investors and governments, given their heightened awareness around
 - a) the vulnerability of the food supply chain,
 - b) the importance of hygiene incorporated in biodegradable packaging (corrugated cardboard and biodegradable plastics) and processing in Biosafety Designed facilities,
 - c) the advantage of proximity (local as opposed to transporting food from the West coast or abroad), and newly established travel restrictions and other measures taken to stem the spread of the pandemic.
- ESG is poised to develop a resilient food system for the future by building sustainable farming operations incorporating a carbon-negative footprint and organic, locally grown solutions with an emphasis on enhanced security for the food system and supply chain.

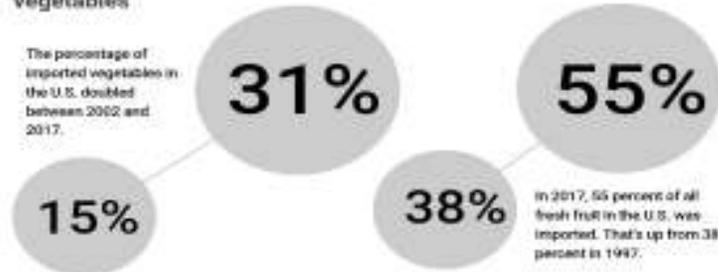
Nexus Between Covid-19 & ESG

Fruit and vegetable imports by the numbers

Which fruits and vegetables are most commonly shipped into the United States?



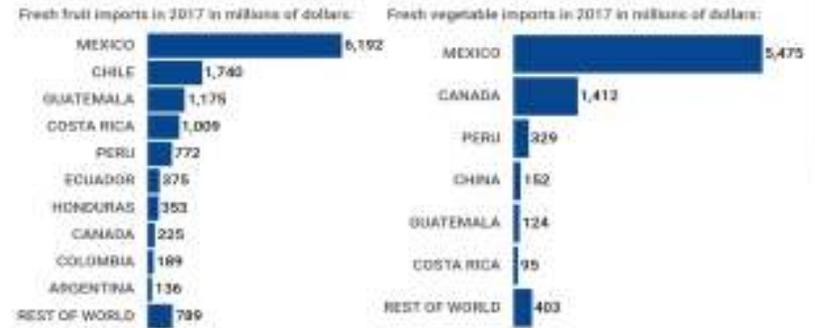
There's been a long term increase in imports of all fresh fruits and vegetables



Net trade surplus, for now

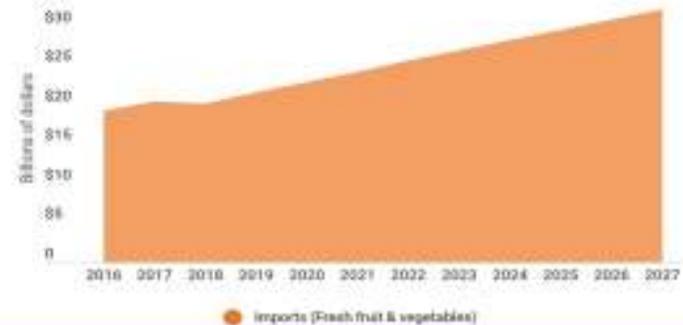
In 2018, the U.S. had an agricultural trade surplus of \$15.9 billion, down from \$25.5 billion in 2015. But USDA projections show growth in imports is outpacing growth in exports. Between 2019 and 2027, U.S. agricultural imports are expected to grow by 35 percent, while exports will increase by 25 percent.

Where do we import our produce from?



Projections for future imports

USDA projects that fresh fruit and vegetable imports will grow by over 67 percent between 2016 and 2027.



Source: U.S. Department of Agriculture Economic Research Service

Diego Mendoza-Moyers / Times Union

ES Share



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Diego Mendoza-Moyers, April 13, 2019, Times Union newspaper

<https://www.timesunion.com/business/article/Yes-more-of-the-fruits-and-vegetables-you-re-13762595.php>

Empire State Greenhouses improves the region's agricultural infrastructure and environment, while delivering healthier, higher quality food, more quickly and less expensive than current means, with an emphasis on food security.

State of Global Agriculture

New York Times: Climate Change Threatens the World's Food Supply, United Nations Warns
August 8, 2019 By Christopher Flavelle

'The world's land and water resources are being exploited at "unprecedented rates," a new United Nations report warns, which combined with climate change is putting dire pressure on the ability of humanity to feed itself.

A particular danger is that food crises could develop on several continents at once, said Cynthia Rosenzweig, a senior research scientist at the NASA Goddard Institute for Space Studies and one of the lead authors of [the report](#). "The potential risk of multi-breadbasket failure is increasing," she said. "All of these things are happening at the same time."

"One of the important findings of our work is that there are a lot of actions that we can take now. They're available to us," Dr. Rosenzweig said. "But what some of these solutions do require is attention, financial support, enabling environments."



State of Global Agriculture

National Geographic: This Tiny Country Feeds the World - The Netherlands has become an agricultural giant by showing what the future of farming could look like.

September, 2017 By Frank Viviano

'The challenge? Put in bluntly apocalyptic terms, he says, the planet must produce "more food in the next four decades than all farmers in history have harvested over the past 8,000 years."

That's because by 2050, the Earth will be home to as many as 10 billion people, up from today's 7.5 billion. If massive increases in agricultural yield are not achieved, matched by massive decreases in the use of water and fossil fuels, a billion or more people may face starvation. Hunger could be the 21st century's most urgent problem.

The brain trust behind these astounding numbers is centered at Wageningen University & Research (WUR), located 50 miles southeast of Amsterdam. Widely regarded as the world's top agricultural research institution, WUR is the nodal point of Food Valley, an expansive cluster of agricultural technology start-ups and experimental farms.'



Structural Challenges in US Produce Supply

Aggregate: ~\$16B*

FARMGATE VALUE



95% of
production

57% of
consumption

*USDA aggregate stats for vegetables, fruits, mushrooms: <https://quickstats.nass.usda.gov/>



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\$16B Produce Industry is Unsustainable

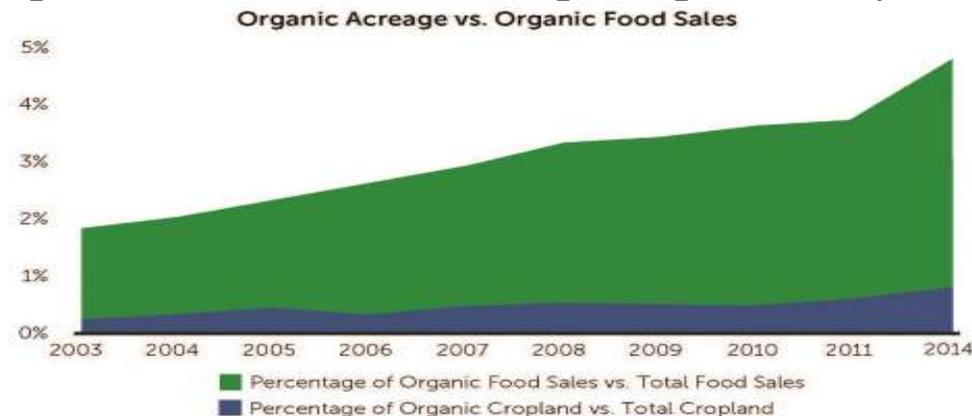
- Weakness in food transportation has been revealed by Covid-19 as it's exacerbated by increased demand given the vast distances food must travel. Transportation links all aspects of the food supply chain.*
- Labor shortages along the entire food system, particularly a shortage of truck drivers impact the entire food supply chain real time.
- Over 55% percent of fresh fruit and just under 33% of vegetables in the U.S. was imported according to the U.S. Department of Agriculture's Economic Research Service as of 2017.**
- Current industrial food supply chain is ecologically destructive & unsustainable – fueling demand growth for “Local & Organic”.
- Dominance of Produce Supply by CA/AZ/Overseas for the Northeast market is UNTENABLE (time/distance, freshness, water scarcity, vulnerable to climate & food security).
- Urban Farming is energy intensive, yields less revenue per sq. ft. & has issues scaling.
- Produce market's failures are freshness, safety and sustainability.
- Agricultural Status Quo means that as existing farms' scale increases, diversity and quality of crops decreases.

* <https://www.forbes.com/sites/jennysplitter/2020/03/18/covid-19-and-truck-driver-shortage-may-threaten-food-supply-chain/#3a00d657523e>

**<https://www.timesunion.com/business/article/Yes-more-of-the-fruits-and-vegetables-you-re-13762595.php>

Organic Food

- Organic food has 30 Years of Double-Digit Year-Over-Year growth.
- 2019 local food sales projected to reach \$20 Billion (67% increase from 2014).
- Primary & secondary schools purchased \$790 Million of local food in 2013-14 AY*
- Organic capacity continues to fall farther behind increasing demand:
 - Lengthy, expensive & complex organic certification; 3-Year process to convert existing field crops
 - Organic field growers still face obstacles for growing seasons, space constraints, and pests



*<https://www.businessinsider.com/the-demand-for-local-food-is-growing-2017-4>

Six reasons ESG Greenhouses are *THE* Solution

Empire State Greenhouses Cobleskill Case Study:

1. Local, Organic, Clean & Safe at Factory Scale:

- Avg. **40,000+ lbs./20 tons/day** of food production year-round
- On-site processing & packing; >95% water efficient*
- Verifiable supply chain & enhanced food safety
- Hygiene in biodegradable packaging such as corrugated cardboard and biodegradable plastic
- Reduction in transportation from 2500+ miles down to 250-mile radius provides greater food security and reduces carbon footprint
- Large reduction of pest & environmental vulnerability
- Multi-crop diversity optimized for growth; less waste

2. Multiple Revenue Streams:

- Food: certified organic produce (leafy greens & fruiting crops); mushrooms; herbs, medicinals & spices
- Digester revenues: tipping fees; green gas sales; RIN & LCFS Credits
- Demand response & net metering programs
- Food hub/Aggregator for local farmers

3. Huge Addressable Market & Guaranteed Sales:

- NYS entities **required to source 25%** of their food from in-state; **Additional 15%** MWBE sourcing requirement
- Offtake LOI's for 100% of food production, RIN & LCFS
- 55 Million people in 8-hour radius =23% US GDP
- Premium product at **Lower Cost** than industrial crops

**Estimates can vary widely based on location, watering practices, systems (hydroponics/aquaponics), and temperature control. Research available upon request.*

Six reasons ESG Greenhouses are *THE* Solution

Empire State Greenhouses Cobleskill Case Study:

4. Integrates *Proven* Clean Technologies:

- 2.5+ MW solar PV & energy storage
- 2 MW combined heat and power & geothermal
- 1.8 MW BioGas digester (waste-to-energy)
- Vertical growing towers & LED grow lights
- State-of-the-art control systems & CEA tech
- Meets or exceeds 95% water efficiency*

5. Operational Flexibility on 80+ Acre Site:

- 40 acres solar PV; 385,000 + Sq. Ft. Facility
- 50+ types of certified organic crops (*See Slide 17*)
- Faster production cycles & turn-around
- Production timed to capture price arbitrage
- Space to triple food production & waste processing

6. Long-Term Cost Controls:

- Executed lease-to-own agreement for the Coby Farm on the SUNY Cobleskill campus
- START-UP NY: 10-year exemption NYS taxes for employees and shareholders
- Energy costs capitalized & converted to revenue
- Good water/utility access & community support
- Securing long-term waste feedstock agreements

**Estimates can vary widely based on location, watering practices, systems (hydroponics/aquaponics), and temperature control. Research available upon request.*

Urban Farming vs ESG

Dwell - *The World's Largest Urban Farm is Opening Next Year in Paris. The six-story-150,000-square-foot garden is expected to yield a ton of organic produce every day for the French capital.*

August 16, 2019 By Duncan Nielson

'In the Paris neighborhood of Le Marais—a chic zone known for its rich, multicultural roots and gastronomic diversity—a major rooftop farm is sprouting. Twenty gardeners will tend to 30 different kinds of plants to produce heaps of organic, nutrient-rich vegetables for the community and adjacent food establishments.

*The farm is being constructed atop the Paris Expo Porte de Versailles, which recently underwent redevelopment. **In high season, it should be able to yield over 2,000 pounds of produce daily.***

"Our fresh produce will be used to feed the inhabitants across the southwest of the city—either directly, through veg box schemes, or via shops, hotels, and canteens—thereby helping reduce food miles," says Pascal Hardy, founder of urban-farming company Agripolis..'

<https://www.dwell.com/article/worlds-largest-urban-farm-paris-agripolis-3cc8ee72>



Urban Farming vs ESG

Agripolis (Paris)

30 Crops

Six stories

150,000 square feet

Yield over 2,000 pounds of produce daily

Versus:

Empire State Greenhouses Cobleskill

50+ Crops

Automated "Greencube" Vertical growing system on 14 levels with 15,000 4'x12' pallets total
782,000 square feet of vertical growing space

~40,000 pounds/20 tons of produce processed, packed, and delivered daily

Hydroponics/Aquaponics

LED grow lights shorten grow cycle & allow use of "light recipes" to optimize flavors and appearance

Renewable Energy-Powered



Greencube Vertical Growing System



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State of Global Agriculture

Forbes: Making Vertical Farming Big in the U.K.

February 16, 2020 By Lucy Sherriff

'Jamie Burrows, co-founder of Vertical Future (largest urban vertical farming company in the U.K.) states...

"With climate change afoot, vertical farming offers a unique set of solutions, growing produce independent of seasonality and other external, market-led forces."

"Advancements in basic technologies associated with vertical farms have improved the business case for vertical farming businesses."

"In an age where transparency and control is everything for customers, we offer an unrivalled service where customers can—within reason—specify their chosen flavor characteristics and aesthetic preferences for certain products, with our team then tailoring growing methods to meet demand."

In 2018 vertical farming was worth \$3 billion globally and it is predicted to grow to \$22 billion between 2019 and 2026.'



~50 Crops Support Production Arbitrage

ESG's local, certified organic crops cost less to produce than standard crops from industrial growers. Growing out-of-season crops compounds the pricing power of our premium products. Flexible growing system with nearly 50 crops enables rapid adjustment to market conditions.

Leafy Greens:

- Arugula
- Bok Choy
- Collard Greens
- Green Onions
- Kale
- Lettuce
- Mustard Greens
- Radicchio
- Spinach
- Rainbow Chard
- Tat Soi

Mushrooms:

- Beech
- Lion's Mane
- Maitake
- Nameko
- Oyster
- Reishi
- Shiitake



Fruiting Crops:

- Bell Peppers
- Hot Peppers
- Strawberries
- Tomatoes

Medicinals & Herbs:

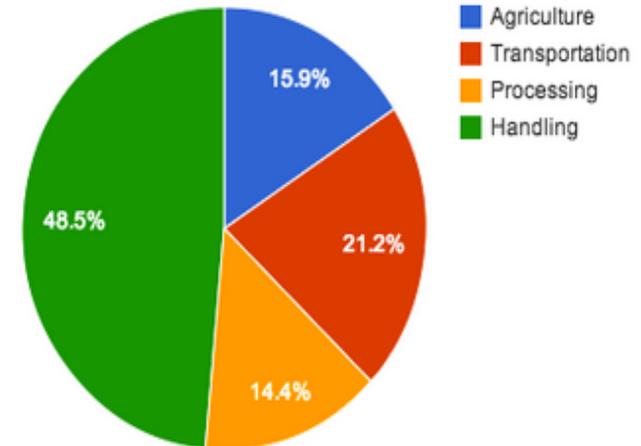
- Anise
- Basil
- Chamomile
- Chives
- Cilantro
- Fennel

- Italian Parsley
- Lavender
- Lemongrass
- Marjoram
- Oregano
- Mint
- Nasturiums
- Rosemary
- Sage
- Tarragon
- Thyme

Energy: Impact on Agriculture

- **NIH: U.S. food system consumes between 10%-15% of total US energy use.**
- **20% is wasted due to spoilage with produce and dairy accounting for the majority of the waste.** *Wasted Food, Wasted Energy: The Embedded Energy in Food Waste in the United States*
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2922696/>
- **USDA study on energy flows in agriculture energy usage is as follows:**
 - **34.4% for fresh vegetables**
 - **38.1% for processed fruits and vegetables**
 - https://web.mit.edu/dusp/dusp_extension_unsec/reports/polenske_ag_energy.pdf
- **Distribution of energy used by the food system in the U.S.**
Food Transportation, State of Oregon, Department of Environmental Quality. A report by: Center for Sustainable Systems, University of Michigan Martin Heller September 2017
<https://www.oregon.gov/deq/FilterDocs/PEF-FoodTransportation-FullReport.pdf>

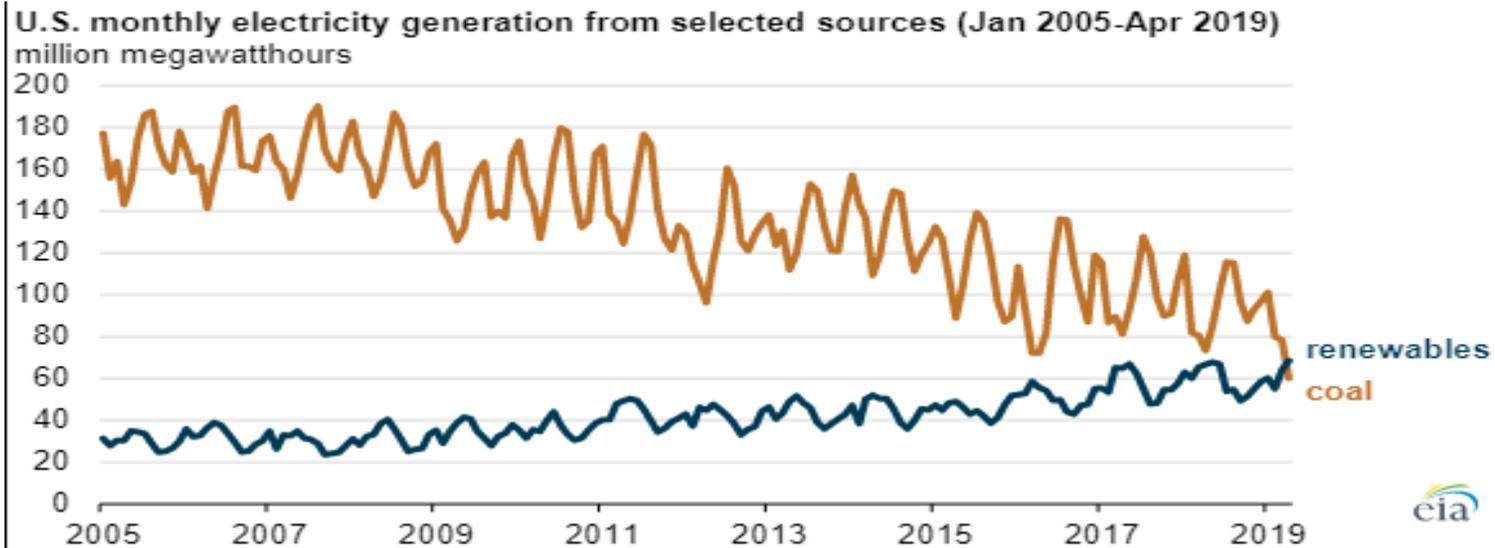
Energy In Food Production



<https://www.chooseenergy.com/blog/energy-101/energy-food-production/>



Energy: Renewables > Coal

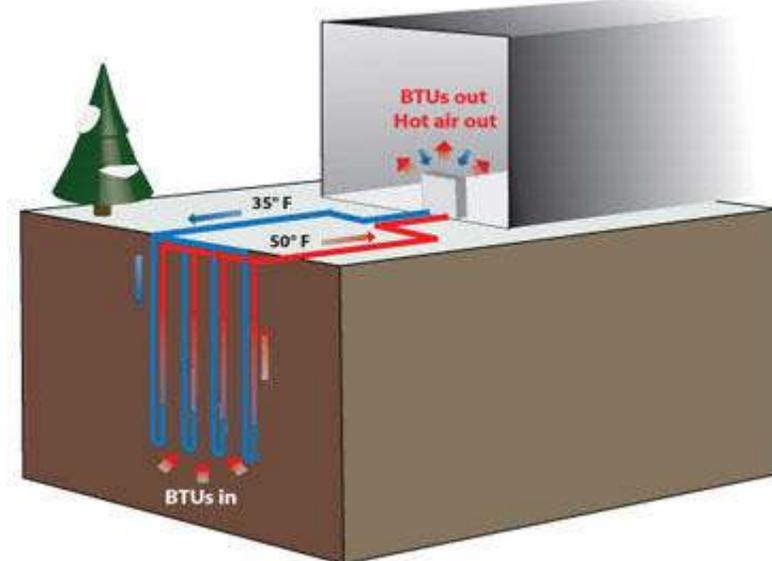


- **U.S. electricity generation from renewables surpassed coal in April 2019**
- U.S. monthly electricity generation from renewable sources exceeded coal-fired generation for the first time based on data in EIA's [Electric Power Monthly](#).
- Renewable sources provided 23% of total electricity generation to coal's 20%.
- Record generation from wind and near-record generation from solar contributed to the overall rise in renewable electricity generation this spring.
- U.S. coal generation has declined from its peak a decade ago.

Source: US Energy Information Administration:
<https://www.eia.gov/todayinenergy/detail.php?id=39992>

Renewable Energy Powered

- **Renewable Energy-Powered Crop Factory**
- **Integrates Proven Clean Technologies:**
 - 2.5+ MW solar PV & energy storage
 - 2 MW combined heat and power & geothermal
 - 1.8 MW BioGas Digester (Waste-to-Energy)
- **Producer-Generator of Energy to Power**
 - Vertical growing towers & LED grow lights
 - State-of-the-art control systems & CEA technology
 - Processing machinery, packaging machinery, cold storage, lighting, and building HVAC control, pumps for irrigation
- **Energy is ~35% of Embedded Cost of Food**



Vertical closed-loop system operating in heating mode
Credit nyscrda.ny.gov / New York State Energy Research and Development Authority

Energy: State of Agriculture

WSJ: Farms, More Productive Than Ever, Are Poisoning Drinking Water in Rural America

One in seven Americans drink from private wells, which are being polluted by contaminants from manure and fertilizer. January 18, 2019 By Jesse Newman and Patrick McGroarty

‘U.S. farms, more productive than ever, are poisoning drinking water for rural Americans.

One in seven Americans drink from private wells, according to the U.S. Geological Survey. Nitrate concentrations rose significantly in 21% of regions where USGS researchers tested groundwater from 2002 through 2012, compared with the 13 prior years. The greatest increases were in agricultural areas. More recent sampling shows the pattern is continuing, at a potentially greater rate.

Among factors producing contaminants: fewer, more-intensively worked farms, bigger cows and shifting crop mixes.

Farmers can’t produce milk and cheese at the low prices American consumers have grown accustomed to without some effect on water.’



Energy: State of Agriculture

“One farm-economy byproduct is manure, which farmers spread across millions of acres and contains nutrients such as nitrates that researchers have associated with birth defects, thyroid problems, cancer and a potentially fatal condition in infants. Another byproduct is decades-old water, laden with nitrates from a nationwide run-up in chemical-fertilizer usage, that is sinking closer to drinking water in some areas”

Bruce Lindsey, USGS hydrologist

WSJ: Farms, More Productive Than Ever, Are Poisoning Drinking Water in Rural America

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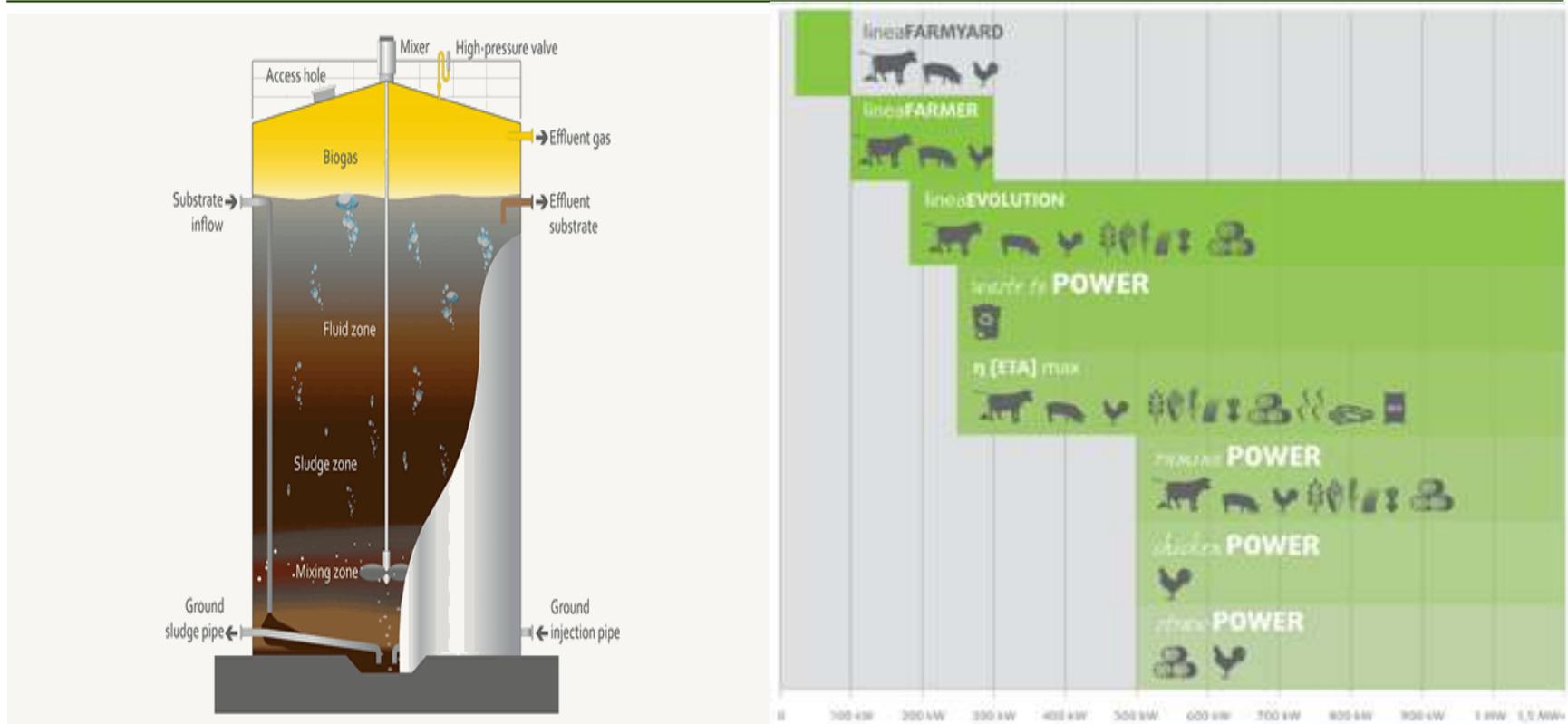
Energy: What is Biogas?

- Anaerobic digesters break down organic waste into usable fuel and fertilizer.
- The fuel is a renewable energy in the form of methane that is used to produce electricity, heat homes and fuel buses.
- Reduces agricultural emissions of methane (a greenhouse gas), CO₂ released from fossil fuels, and odor from confinement livestock facilities
- Mitigate looming disaster of contaminated drinking water and ensuing health issues.
- Renewable natural gas has appeal to utilities, municipalities and others as it can be used to meet carbon-reduction mandates and goals as well as to create low-carbon fuel standard credits, which have value and can be traded.
- Producing pipeline-quality gas from manure is an attractive business proposition because of the significant carbon reductions of doing so, which boosts the value of the corresponding low-carbon fuel standard credits.
- Though biogas production is about 1% of total U.S. gas production—output is growing at a clip of about 4% a year*

Energy: Biogas, CAFO, USDA

- Animal Feeding Operations (AFO): Agricultural businesses that keep and raise in a confined environment.
- Animals confined are amidst feed, manure and urine, dead animals, and production operations on a small land area compared to other land animals that are grazing in open space.
- There are 450,000 + AFOs in the United States.
- Concentrated Animal Feeding Operation (CAFO): A CAFO is an AFO with 1,000+ animal units (an animal unit = an animal equivalent of 1,000 pounds live weight and equates to 1,000 head of beef cattle, 700 dairy cows, 2,500 swine weighing more than 55 lbs, 125,000 broiler chickens, or 82,000 laying hens or pullets) restricted to one site in excess of 45+ days in a given year.
- When an AFO of any size discharges manure or wastewater into a natural or man-made ditch, stream or other waterway is defined as a CAFO, regardless of size. CAFOs are regulated by EPA under the Clean Water Act in both the 2003 and 2008 versions of the "CAFO" rule.
- AFO/CAFO owners and operators are encouraged to minimize potential air and water pollutants from natural or man-made storage facilities.
- Natural or man-made manure storage facilities release emissions of methane (a greenhouse gas), CO₂ released from fossil fuels, and odor from confinement livestock waste.
- There is a need to mitigate looming disaster of contaminated drinking water and ensuing health issues.

Energy: Anaerobic Digesters

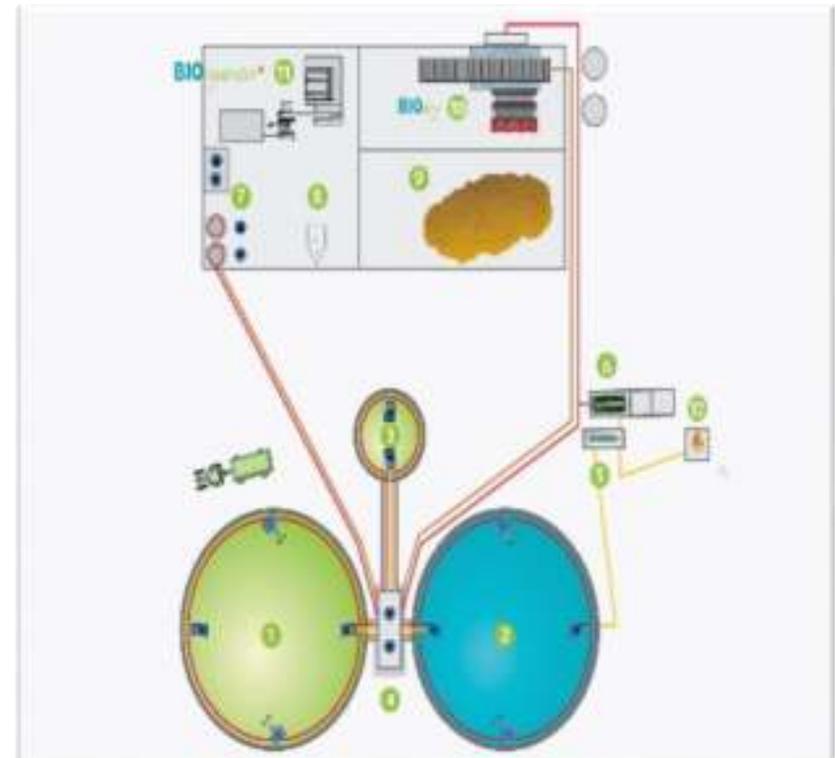


- Support Regional Dairy & Hog Farms with CAFO compliance
- Vital to Local Dairy & Hog Farms for EPA & State Compliance
- Convert waste into energy
- 1.8 MW BioGas Digester (Waste-to-Energy)

Waste-to-Energy: 1.8 MW BioGas Digester

Empire State Greenhouses Cobleskill Case Study:

- **Initial energy production: power & gas**
- **Process minimum target:**
 - 220,000 tons of wet or "liquid" manure/year
 - Daily Output of methane production - GGE of CNG exceeds 2,800 gallons
- **Supports regional dairy farms with CAFO compliance (NYS 3rd Largest in US)**
- **Local & state government support for permitting & securing feedstock**
- **Generates ~\$7M+ per year @ 80% margins with potential to double in size:**
 - RIN and LCFS credit sales
 - Tipping fees
 - Natural gas sales
 - Digestate



Product Distribution

- Chobe/ESG has *Letters of Intent* and/or Off-take agreements for 100% of its total production capacity from:



- **Business-to-Business Focus on Wholesalers & Corporate Level Grocery Supply:**
 - Low customer acquisition costs
 - Customers responsible for shipping & distribution costs
 - Local Market for NYC area faces product shortfalls amidst large & increasing demand
 - ESG has requisite year-round production of at least 1 truckload per day
- **BioGas Digester vital to Local Dairy Farms for EPA & NYS-DEC Compliance:**
 - Capacity of 220,000 tons of wet or "liquid" manure/year
 - Methane production: GGE of CNG > 2,800 gallons per day (TruStar Handles Distribution)
 - TruStar LOI Guarantees ~\$7M + per year (RIN & LCFS Credit Sales; Tipping Fees)
 - Room for at least a doubling in size of Digester on site or adjoining IDA property

Sustainability Metrics – Carbon Negative

Sources of Carbon Dioxide Savings	Tons CO2 / YR
Reduction in Transportation	3,233
Biogas Digester + Composting of Dairy Manure	13,781
Energy Efficient 3.0 MMOL/J Lighting	7,742
Combined Heat & Power	3,257
Solar PV	2,298
Greenhouse Plant Carbon Sequestration	4,400
Total	34,711

Metrics are preliminary – NYSERDA funded energy study by Stantec will provide final figures

Sustainability Metrics – Carbon Negative

Water Savings:

- ~234 million gallons saved annually (95% savings) vs conventional equivalent
- ~9 million gallons of rainwater harvested annually providing majority of irrigation water for plants

Carbon Savings:

- 24-hour harvest to local (~200-mile radius) delivery eliminates 94% of the carbon footprint for shipping produce from west coast to New York Markets
- Digester processing of 220,000 Tons of liquid dairy manure into pipeline grade biogas & composted digestate converts dairy manure lagoon environmental disaster into clean fuel massively reducing carbon footprint of local dairies
- CEA greenhouses have high density photosynthesis conversion of carbon dioxide and water into plants and oxygen
 - 100 X the plant yields per square foot of growing space relative to field growing
 - Roughly 1 Kg CO₂ sequestered per kg of plant growth
- CHP has lower carbon footprint than grid electricity due to high efficient use of waste byproducts (heat + CO₂)

Sustainability Metrics – Carbon Negative

Investment:

- \$100 Million

Jobs:

- 100 FTE direct and 400 indirect jobs

Community Engagement:

- Startup NY Partnership with SUNY Cobleskill
- Classroom & Lab on Site
- Digester Eliminate Community Problems Relating to Dairy Manure Lagoons

Energy Efficiency:

- LEED Gold or Platinum Certification for building

- Creating a benchmark for greenhouse and CEA growing facilities energy efficiency (none exists today)
- CEA vertical farming facilities are more space & HVAC efficient than inefficient traditional greenhouses growing on a single level

Energy:

- Energy production combined with efficiency overcomes energy intensity of controlled environment agriculture resulting in net zero energy
- CHP systems provide electricity, heat, & CO₂
- Multiple cycles of waste streams used as inputs for other processes resulting in industrial symbiosis and higher total efficiency with lower environmental footprints

Ideal Team To Mitigate Execution Risk

Multi-disciplinary, veteran team of project managers, consultants, and executives with more than 100 years of experience. Expertise in Renewable Energy, Commodities (Agriculture, Energy, and Mining), Life Sciences, Technology, Logistics, and Finance at projects and firms across the globe.

Management Team



Jon Gross
CFO



Louis Ferro
Chairman &
President



Jennifer Fearon
Principal



Shelley Goldberg
CEO



Boris Taylor
COO



Richard P. George, PhD
CTO

Advisory Board

Gov. George Pataki: Former Governor of NY

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Dr. Indranil Ghosh: CEO and Founder of Tiger Hill Capital

J. Nelson Happy: Counsel - Red Apple Group

Manuel Ron, JD, MBA: Invescore Group

Alex Chalmers: Iron Bridge Capital

Controlled Environment Agriculture & Traditional Growers

- Traditional growers in California & Arizona are the main competitors with ~99% Market Share (Salad Green production is highly concentrated in Salinas Valley, CA & Imperial Valley, AZ)
- “Glass Box” traditional greenhouses cannot grow year-round in Northeast
- The total *proposed* capacity industry-wide for CEA is less than 1% of the US or North East markets
- CEA has potential advantages over traditional growers in SEVEN areas: Taste; Freshness; Shelf-Life; Greenhouse Gas Footprint; Health/Pesticide use; Food Safety & Supply Chain Tracking

	ESG	Current Market	ESG Difference
Harvest Time to Customer	12-24 Hours	7 - 10 Days	>700% Better
USDA Climate Zone Tolerance	+ / - 2	NONE	400% Better
Energy Costs per ft. ²	\$0.24 per ft.2	\$0.75 - \$1.50 per ft.2	>300% Better
Crop Cycles per Year	12 - 20	1 - 3	>400% Better
Yields per ft. ²	>100X	1X	100x Better

- CEA & Urban Farming have gained traction & press. Notable Local, Funded CEA companies include:
 - AeroFarms
 - Bowery Farms
 - Clearwater Organic Farms
 - Eden Works
 - Plenty
 - Bright Farms
- 2017: \$10.1B in AgTech – YoY +29% (994 deals & ~1,500 Investors); Record \$84B VC Investments*
- 2018: Investment On Track to Match, if Not Exceeded 2017, with Final Numbers Not Yet In**

Projected Financial Data

Figures in \$ 000's	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Financial Projections										
Revenues	-	31,456	72,331	76,025	81,470	87,404	93,876	100,946	108,676	117,138
Gross margin	(585)	10,011	33,113	35,293	38,643	42,346	46,883	51,431	56,451	61,881
EBIT	(4,487)	1,273	23,289	24,911	27,735	30,871	34,977	39,111	43,339	47,869
EBITDA	(3,484)	4,981	27,199	28,935	31,759	34,858	38,472	42,509	46,623	51,151
Net profit (loss)	(6,254)	(6,106)	22,592	23,005	25,740	30,271	33,396	39,079	43,316	47,855
Non-current assets	59,348	79,102	71,541	68,067	64,592	61,155	58,759	56,861	54,128	51,395
Current assets	-	18,656	14,242	10,376	12,422	14,623	16,994	19,550	22,307	25,286
Cash	3,446	1,976	9,828	10,907	10,877	10,790	13,311	41,762	75,428	113,806
Total Assets	62,794	99,734	95,611	89,349	87,891	86,568	89,065	118,173	151,863	190,487
Equity	1,043	(3,063)	9,529	22,534	35,507	53,034	76,463	105,662	139,409	178,054
Liabilities	61,750	102,797	86,083	66,815	52,384	33,534	12,601	12,511	12,454	12,433
Total equity and liabilities	62,794	99,734	95,611	89,349	87,891	86,568	89,065	118,173	151,863	190,487
Cash flow from operations	(5,081)	(10,160)	22,264	22,691	25,277	29,664	34,892	40,451	44,716	49,428
Cash flow from investing activities	(49,052)	(29,961)	(600)	(550)	(550)	(550)	(1,100)	(1,500)	(550)	(550)
Cash flow from financing activities	56,825	38,652	(13,812)	(21,062)	(24,757)	(29,201)	(31,270)	(10,500)	(10,500)	(10,500)
Change in cash & cash equivalents	2,692	(1,469)	7,852	1,079	(30)	(87)	2,522	28,451	33,666	38,378
Cash closing balance	3,446	1,976	9,828	10,907	10,877	10,790	13,311	41,762	75,428	113,806
Annual food production (Lbs)	-	5,537	12,120	12,435	13,042	13,688	14,375	15,108	15,890	16,724

- **Projections Include:**

- 385,000+ SF facility (1st production 2Q 2022; full production 4Q 2022); average daily food production of >20,000 pounds
- Equity principal repaid in full by January 2024
- 1.8 MW BioGas Digester (Online 2Q 2021); generates \$7M + per year @ 80% margins from: RIN and LCFS credit sales; tipping fees; natural gas sales; other potential by-products

- **NOT MODELED:** Crop-specific arbitrage pricing (35% premium assumed); gh expansion (sites or Coby farm); expanded digester

Capital Structure & Use of Proceeds

Capital Structure (000's)

Equity	\$ 9,000
Debt	\$ 83,000
Equipment Leases	\$ 3,000
Solar Leases	\$ 4,000
Grants	\$ 11,000
Total	\$110,000

Uses of Proceeds (000's)

Land Prep	\$ 1,500
Facilities Construction	\$ 28,500
Energy Infrastructure	\$ 26,000
Equipment	\$ 30,000
Working Capital	\$ 24,000
Total	\$110,000

- **Debt Placement Agent:**
Raymond James & Associates, Inc. (NYSE, SIPC, FINRA)
- **Lease-to-Own for SUNY Cobleskill’s “Coby Farm” Property (*Executed*)**
- **Accepted into following programs:**
 - START-UP NY (10-year NYS Tax abatement for ESG & employees (application in process))
 - NYSERDA New Construction Net-Zero Energy Program
 - ReCharge NY (7-year discounted Power Rates)
- **Possible Grants & Certifications:**
 - ESD Grants (may exceed \$5M awarded); Upstate Revitalization Initiative Grant (max \$10.5M)

Why You Should Invest

IDEAL for the long-term investor seeking cash dividends and high returns over 4 or more years.

▪ **Strong, Defensible Value Proposition:**

- ESG team has the requisite experience to mitigate execution risk.
- **Property control** (lease-to-own); **SUNY Cobleskill** partnership; **START-UP NY's** 10-year NYS tax exemption
- **Certified organic**; Sustainable & Local to NYC; NY Grown & Certified
- Flexible mass production enables **quick rotations of up to 50 Premium crops** to maximize revenues
- Energy efficient design **cuts operating costs 30%**; Creates new **recurring revenue streams**

▪ **Strong Margins, Recurring Revenues, Cash Dividends & Principal Repayment within 5-Years:**

- **LOI's for 100% of ESG's production** from crops & waste Energy; **FIVE** main revenue sources
- NYS entities **required to source 25%** of food in-state & **additional 15%** MWBE sourcing requirement
- Capitalizing operating expense (energy) creates consistent, recurring high-margin revenue streams
- Production arbitrage maximizes profitability & Hedges market pricing risk

▪ **Vast Market with Strong Growth:**

- Organic & local has **30 years of double-digit YOY growth**; food a necessity; **no significant competitors**
- Business-to-business model provides more consistency

▪ **Good for Environment, Local Economy & Enhances Food Security:**

- Reduces greenhouse gasses; water-efficient; sustainable land-use; solves livestock waste problems
- Fits in social impact/multi-bottom line portfolios; supports economy of upstate NY
- Increased hygiene in biodegradable packaging & reduced transportation from West Coast/Abroad

Debt Placement Agent: Raymond James

Raymond James

PUBLIC FINANCE INVESTMENT BANKING

Empire State Greenhouses, LLC has signed an engagement letter on April 3, 2018 with Raymond James & Associates, Inc. to serve as the Placement Agent in connection with the issuance of the Debt for the project is expected to cost approximately \$80 million for which Empire State Greenhouses expects to borrow approximately \$72 million, including multiple loans from programs such as USDA, NYS, private equity, banks, etc.

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Debt Placement Agent: Raymond James & Associates, Inc.



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greenhouses
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