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The 2013 Energy Briefing

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David Rosenberg

Gamesa Wind

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U.S. Wind Market Update

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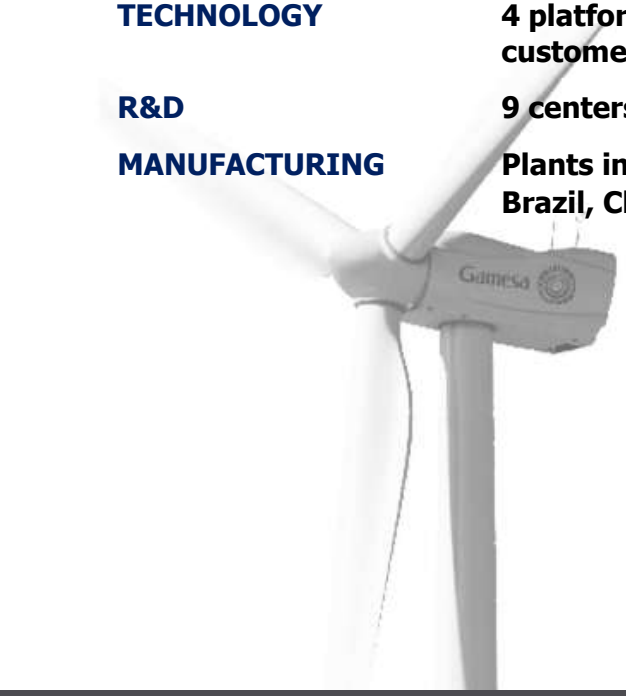
Gamesa Technology Corporation

Global, technological leader; 18 years in the wind sector

Global Presence

INSTALLATIONS	**26.8 GW - 5 continents**
O&M CONTRACTS	**19.1 GW**
DEVELOPED/INSTALLED	**5.7 GW**
TECHNOLOGY	**4 platforms to serve all customer segments**
R&D	**9 centers globally**
MANUFACTURING	**Plants in US, Europe, India, Brazil, China**



Gamesa North America

U.S CORPORATE OPERATIONS
Headquarters in Pennsylvania; Sales and development offices in Texas, Minnesota and California

GAMESA U.S MANUFACTURING OPERATIONS
Nacelles plant – Fairless Hills, PA
235,000 sq. ft. Factory in three production bays and 75,000 sq. ft. warehouse.

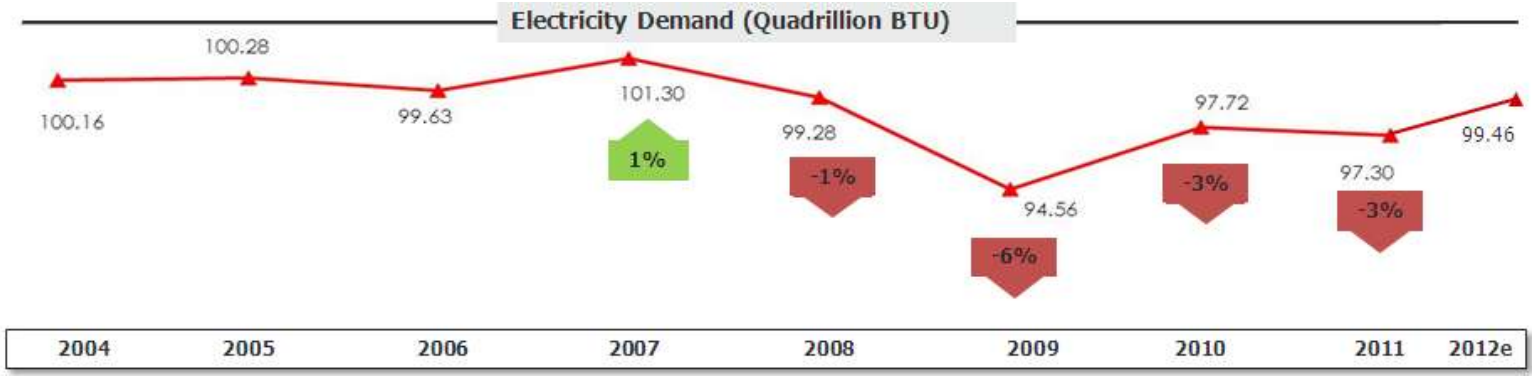
Blades plant - Ebensburg, PA
168,000 sq. ft. Factory with offices & warehouse on site

US EXPORTS
In 2011, Gamesa awarded the U.S. Export-Import Bank "Renewable Energy Exporter of the Year"

GAMESA UNIVERSITY-TRAINING for EMPLOYEES/CUSTOMERS
Richard W. Hammill Professional Development Center operates jointly with Bucks County Community College in Bristol, Pa.

North America Power Market Outlook

Electricity demand recovering to pre-recession levels; Renewables expected to grow



Sources: AWEA , IHS, Gamesa, EIA, World Bank

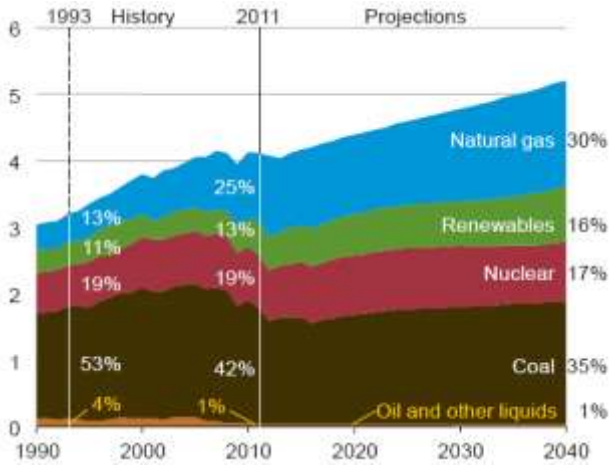
U.S. Electricity demand slowly recovering to 2007 levels.

2013 growth expected to be 1.5%.

Average annual growth through 2035: about .9%

- About 70GW of power generation is expected to retire between 2012 and 2017
- During the same period, about 54GW of conventional generation capacity and another 42GW of wind capacity will be added
- Increased generation from renewable energy, excluding hydropower, accounts for 32 % of the overall growth in electricity generation from 2011 to 2040
- With the anticipated rise of natural gas prices, the switch to coal will abate and power prices are expected to rise

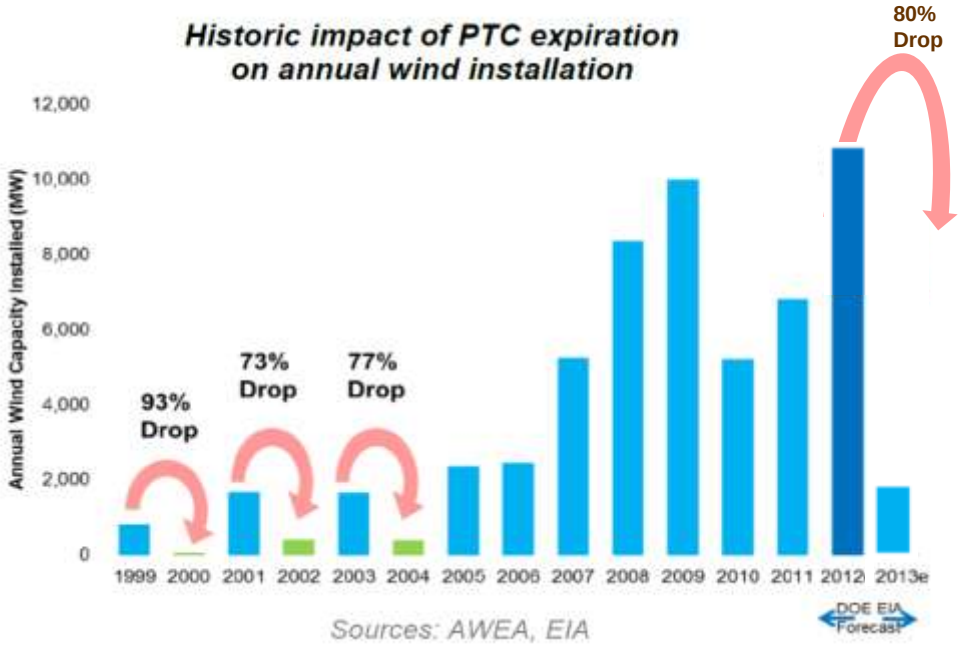
Generation mix; new energy and /or carbon policy can cause a major shift



U.S. Wind Market

PTC History and Impact

Allowing the PTC to expire has created a 'boom-bust' cycle for the industry

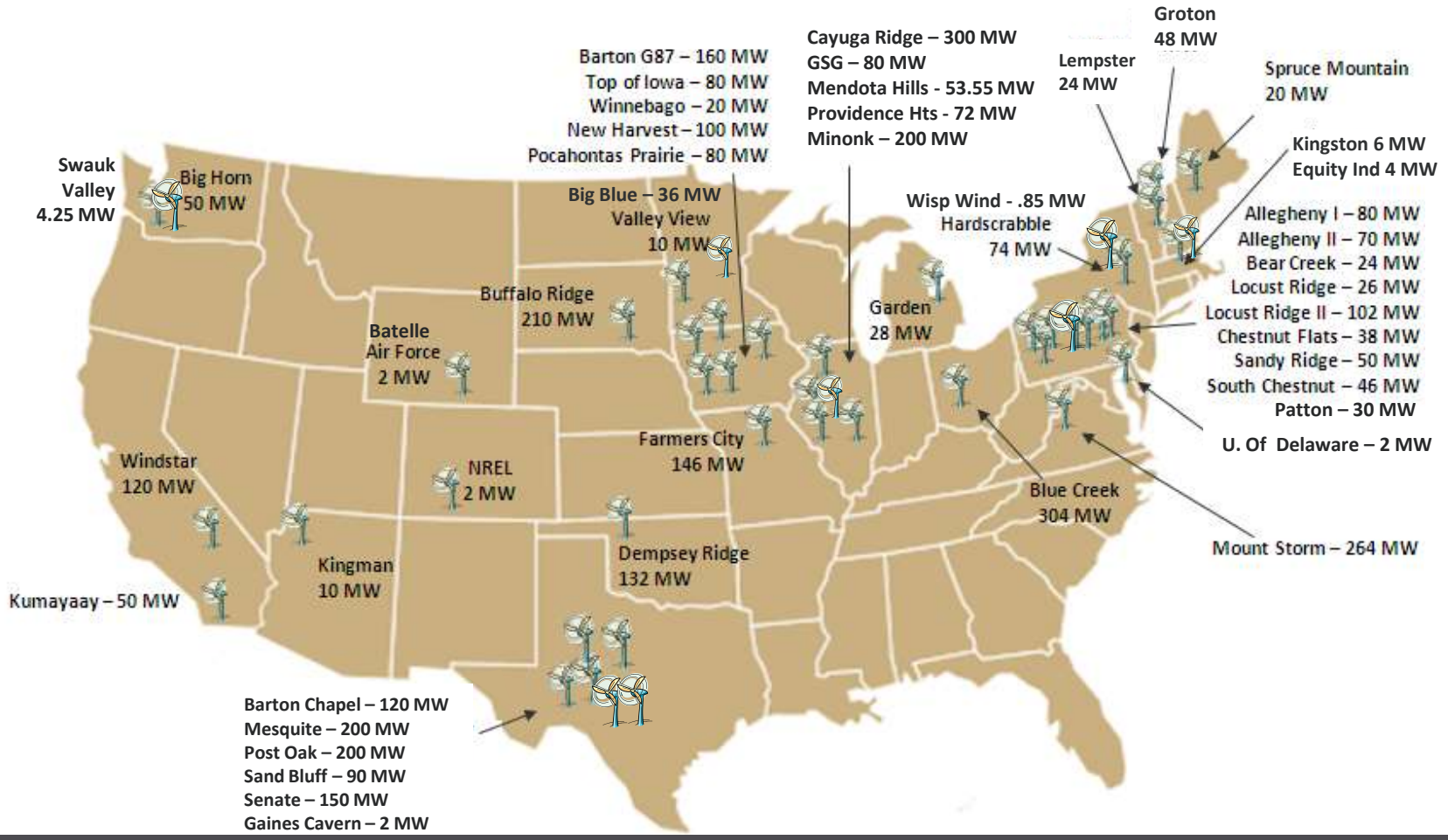


- The federal Production Tax Credit (PTC) program began in 1992. It provides a 2.2 cent tax credit for each kWh of electricity generated during the first 10 years of operation.
- Congress has extended the provision five times and has allowed it to sunset on four occasions.
- Following nearly a year of congressional debate and uncertainty regarding its fate, the PTC expired on 12/31/12 and then was renewed by Congress and signed into law January 2, 2013.
  - Former PTC language associates eligibility with "in-service" date
  - New legislation links PTC eligibility to construction start prior to 1/1/2014

Gamesa U.S. Installed Capacity: 3,921 MW

2,000 turbines on 48 wind farms in 21 states
2012 a record year – 1,340 MW commissioned

TOTAL US WIND FARM INSTALLATIONS : 60,000 MW

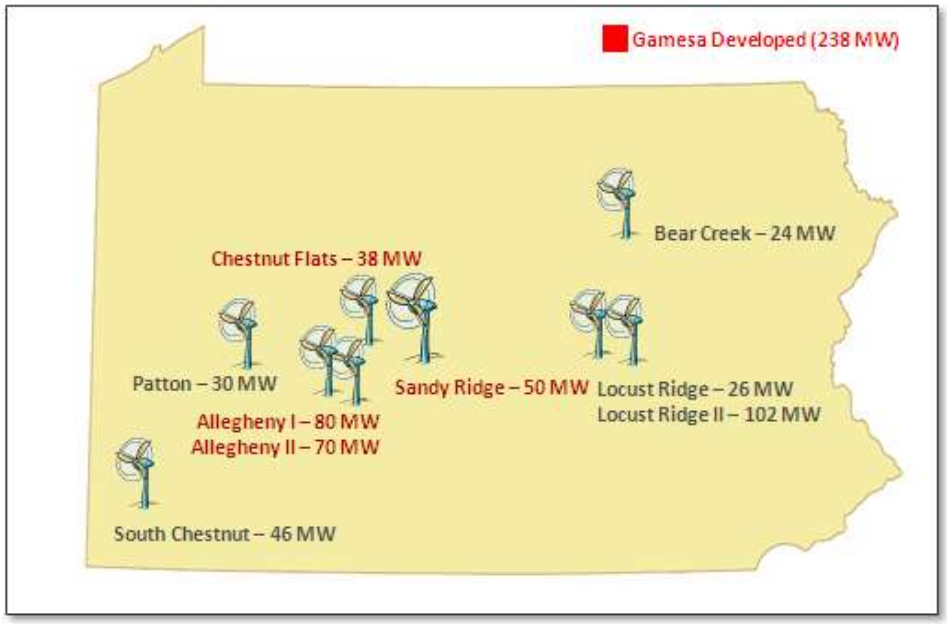


PA Wind-Joins the GW Club in 2012

Statewide Installed Capacity: 1,339 MW on 25 wind farms

Gamesa 35% of PA Installations

466 MW on 9 wind farms



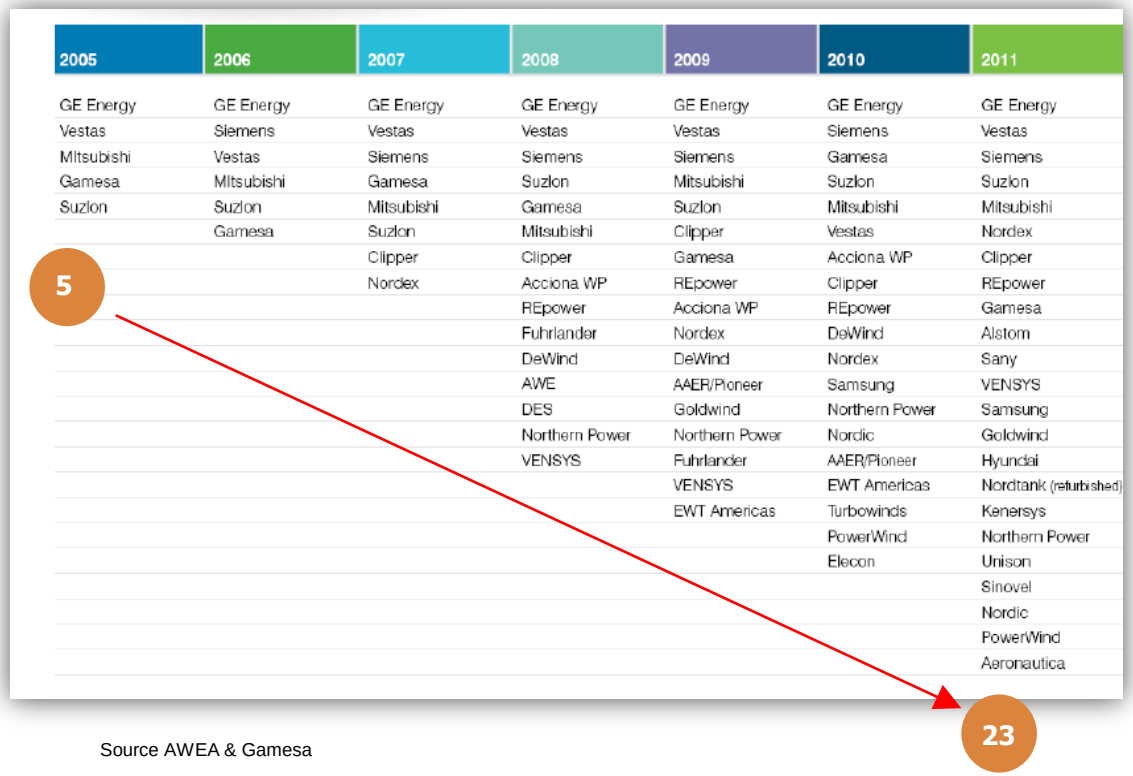
Chestnut Flats Wind Farm, EnXco, Blair & Cambria Counties

Pennsylvania Alternative Energy Portfolio Standards (AEPS) Act of 2004

- Electric distribution companies and electric generation suppliers must supply 18% of electricity using alternative resources by 2021
- AEPS requirements drive wind energy growth

U.S. Wind Market: Competition Escalating

23 OEM'S fight for market share in 2012



Source AWEA & Gamesa

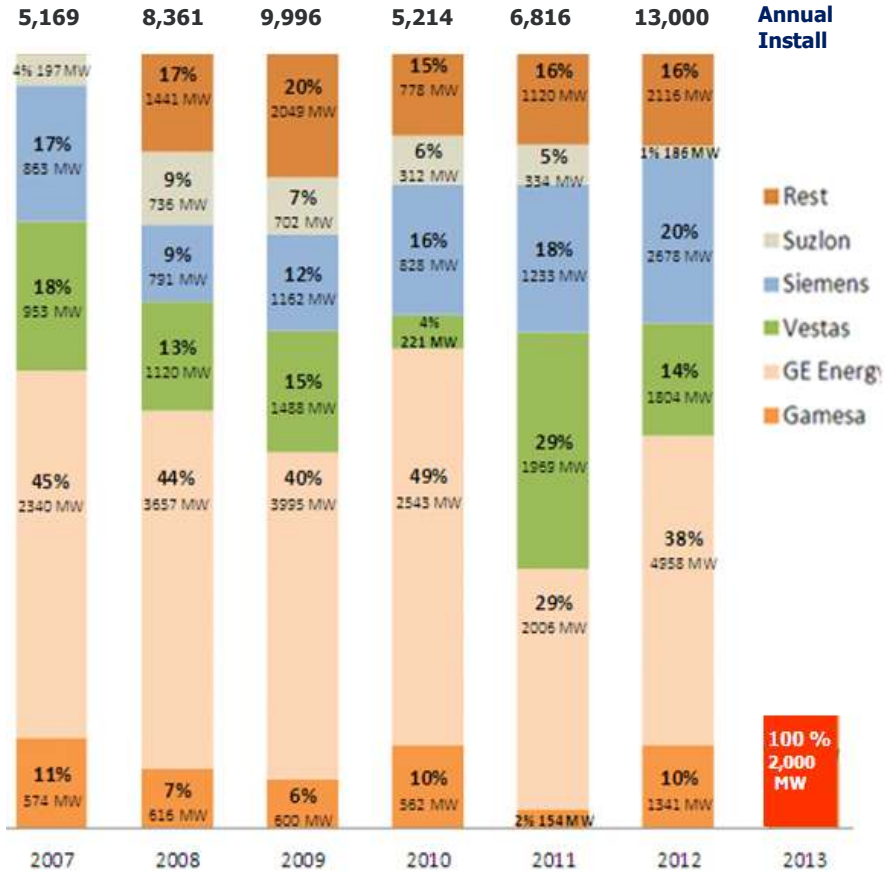
2012 US Installations by OEM		
GE Energy	4958.6	36.7%
Siemens	2677.9	20.4%
Vestas	1804.4	13.7%
Gamesa	1341.1	10.2%
REpower	589.2	4.5%
Mitsubishi	418.6	3.2%
Nordex	274.1	2.1%
Clipper	250.0	1.9%
Acciona Windpower	195.0	1.5%
Suzlon	186.9	1.4%
Goldwind	147.0	1.1%
DeWind	140.0	1.1%
China Creative Wind	61.2	0.5%
Sany	52.0	0.4%
Guodian	9.0	0.1%
Sinovel	4.5	0.0%
HZ Windpower	4.0	0.0%
PowerWind	2.7	0.0%
Aeronautica	2.3	0.0%
Hyundai	2.0	0.0%
EWT Americas	1.8	0.0%
Leitner-Poma	1.5	0.0%
Siva	0.25	0.0%

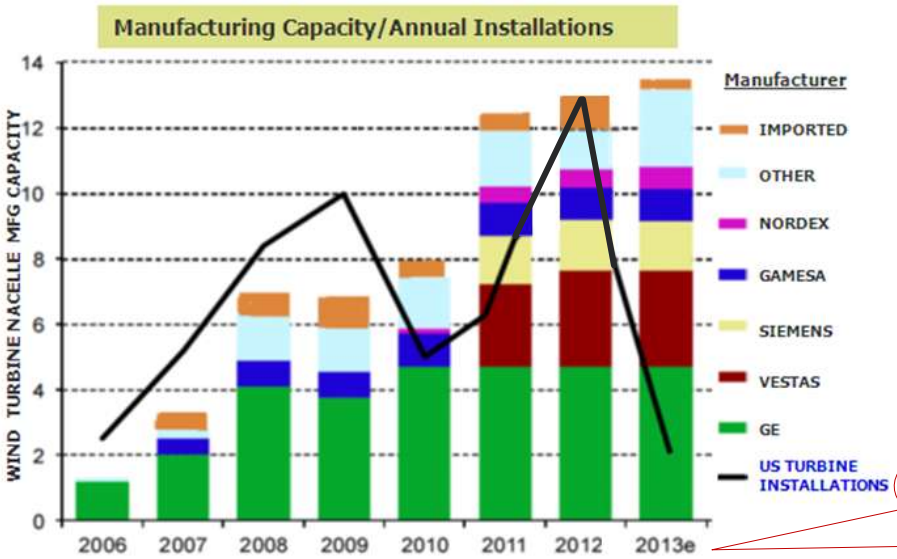
Source: AWEA

U.S. Wind -Market Share & MFG Capacity

- 80/20 Rule applies, top 4 players control 80% of the market, leaving 19 players to fight over the balance
- Major competitors jockey for market position
- With smaller volumes expected through 2016, Tier 2 OEM's cannot sustain manufacturing
- Expect "bottom feeders" to exit market

Struggle for market share, Darwinism plays out in the market



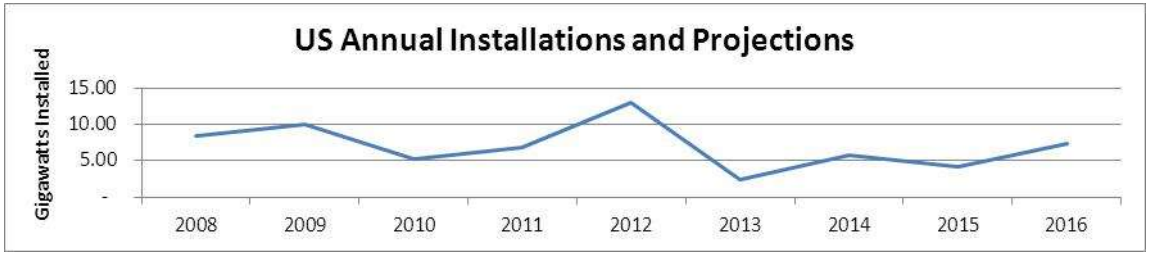


Supply /demand mismatch in 2013
Good for customers; competitive pricing expected

Source: Bloomberg NEF, Gamesa

U.S. Market Outlook

2013 PTC is reality; AWEA supports a phase-out



Source: IHS

Assumptions and reality

- Treasury, IRS do not set limits on when 2013 projects go commercial
- PTC: Renewed in 2014 based on AWEA's recommendation for expedited ramp-down; program ends 12/2016
- State RPS: Requirements mostly fulfilled; about 2.5GW of wind projects/year through 2015[1]
- National energy policy impacts dynamics; DOE goal of 25% by '25 would drive up demand

2013: Lead times slow start-ups and limit projects going COD

- Few, if any PPAs-most signed by utilities in 2010-2011 in anticipation 2013 PTC expiration

2014: Bulk of 2013 projects COD by year-end

- Natural gas prices still low but move to $5/MMBtu[2]
- Power demand remains low

2015: Demand for wind remains low; many states have exceeded RPS requirements

2016: State RPS ramp-up to meet requirements plus expiration of PTC drive "bump" in demand

1. Source: AWEA and EER 2. Source: EER, EIA

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Brandywine Valley
Heating & Air Conditioning

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Geothermal Heating and Cooling

Heat and cool your home or office

While reducing your Carbon Footprint!

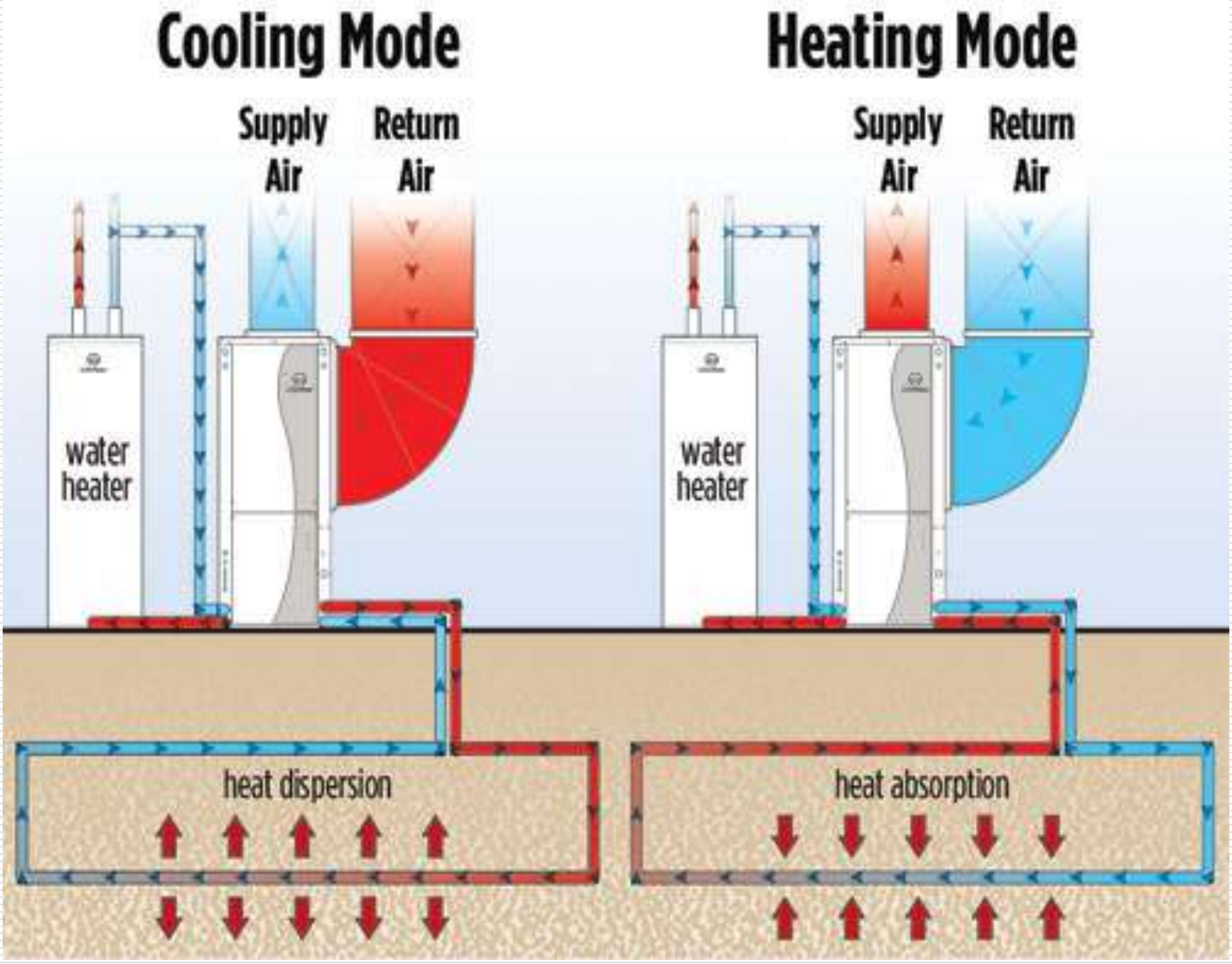
Geothermal Benefits

- Lower operating cost
- Lower life cycle cost
- Enhanced comfort
- Safe
- Quiet
- Reliable

Geothermal basics

- Provides both heating and cooling
- Uses a conventional duct system
- Package type unit most common
- Split units offer flexibility
- Earth Loop required

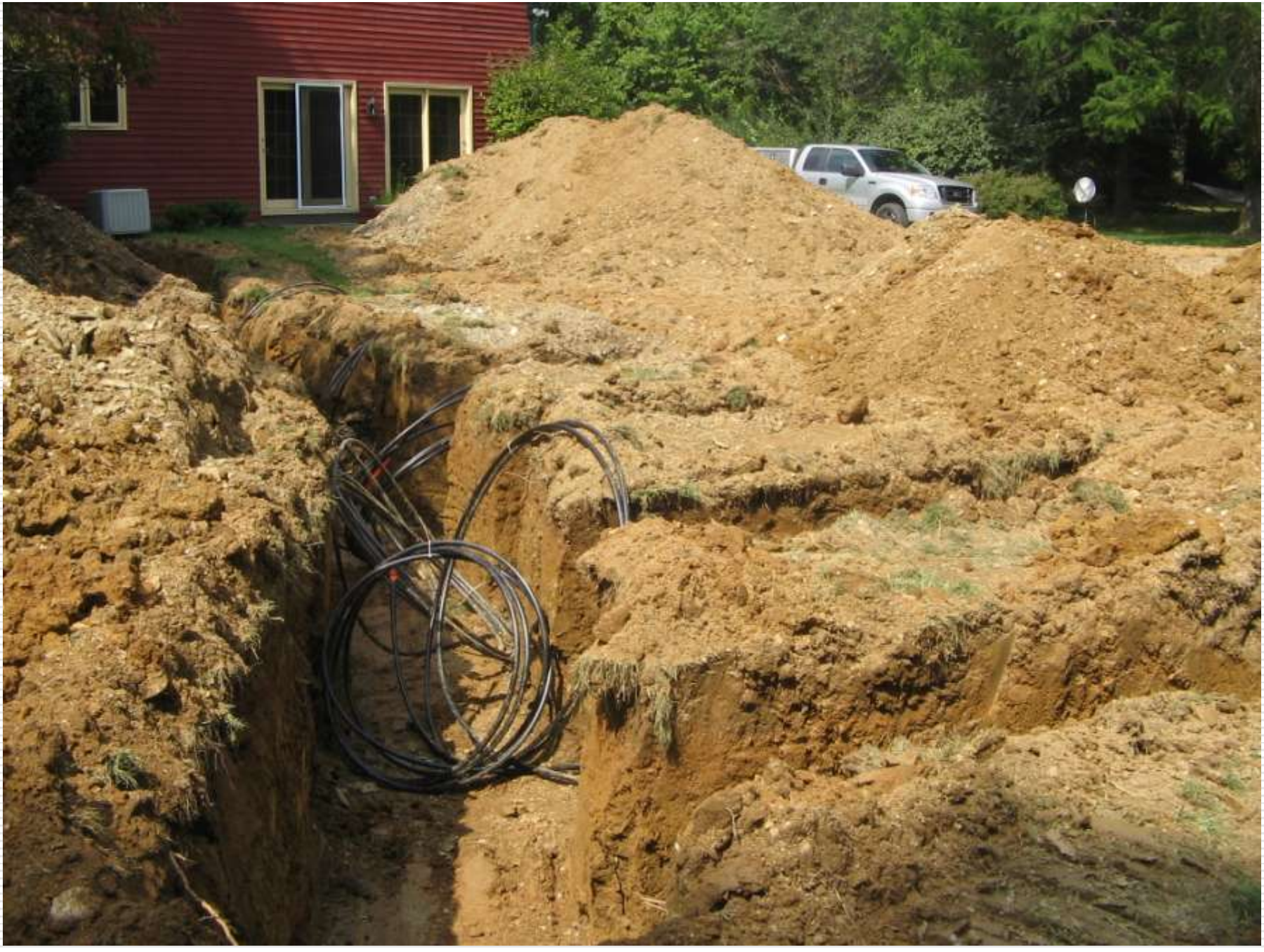

THERE IS A
TREASURE
IN YOUR BACK YARD.*
* free and renewable supply of energy


Cooling Mode
Supply Air
Return Air
water heater
heat dispersion
Heating Mode
Supply Air
Return Air
water heater
heat absorption

Earth Loop Designs

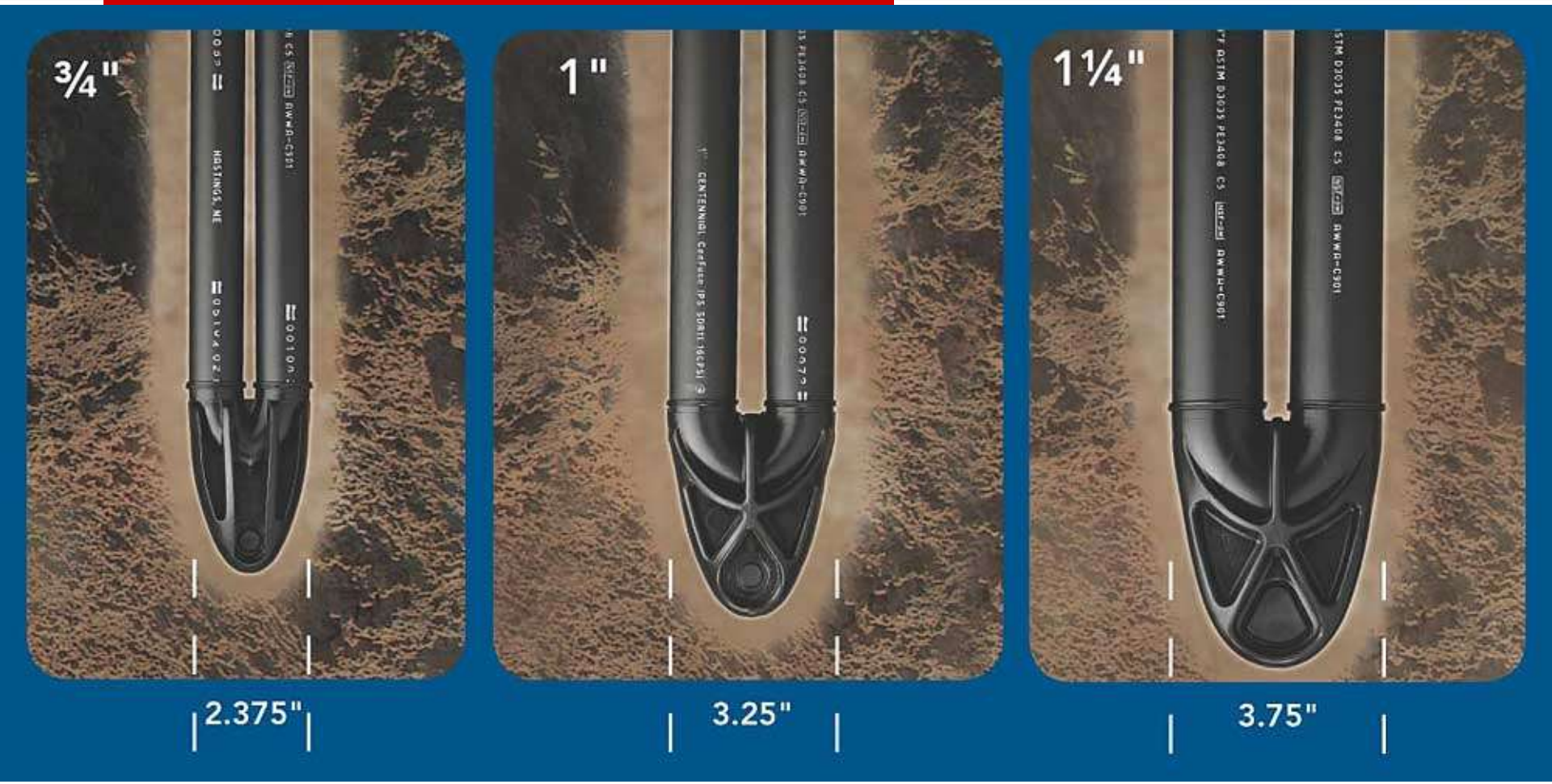
- Horizontal Trench Loops
- Horizontal Slinky Loops
- Horizontal Bore Loops
- Vertical Loops
- Pond Loops
- Open system
- Commonly known as a Pump and Dump

Horizontal Loop



Vertical Loop

U-bends



Standard Geothermal installation


1171