

Raser Technologies, Inc.

Overview Presentation

Utah Geothermal Working Group Meeting

Michael Hayter
Director – Geothermal Development

April 23 , 2008



Raser Technologies, Inc.

Raser Technologies is a publicly-traded, environmentally-focused technology licensing and development company, seeking to develop clean, renewable geothermal electric power plants in a fraction of the conventional time, incorporating licensed heat transfer technology

Who is Raser Technologies?

- Formed in 2002
- Stock trades on New York Stock Exchange Arca (RZ)
- Market Capitalization, \$500 million
- Geothermal development and technology licensing
- Management team with deep experience in power generation, power purchasing and plant construction
- Geothermal technologies:
 - PureCycle® advanced binary cycle (United Technologies)
 - K-Cycle advanced binary cycle (hold global license)
- Geothermal rights and options on more than 210,000 acres in six states

Raser Technologies Green Power Strategy

Power Systems
(Geothermal Operations)

Transportation & Industrial
(Motor & Drive Technology)



100 MPG SUV PHEV DEVELOPMENT PROJECT

UP TO **100 MPG**
LOCAL DAILY DRIVING
OR
ZERO EMISSIONS

Target Specifications	
Vehicle Platform	4WD Fullsize SUV
Fuel Economy	100 MPG City* 34 MPG Highway
Hybrid Architecture	Plug-in Series Hybrid
Acceleration	< 9 Seconds 0-60 MPH
Powertrain	Full Electric Drive 4WD Transmission
Drive System	200 kW Symetron™ AC Induction
Generator	100 kW Symetron™ Electric Generator
All Electric Range	40-Miles
Batteries	Advanced Li-Ion

Propelled by a 200kW Symetron™
Electric Drive system and a
100kW Symetron Generator

raser
TECHNOLOGIES

In Association With
HybridConsortium.org
Plug-In Hybrid Development Consortium

*Typical daily driving up to 40 miles a day, recharged from the grid.

Well to Wheels



Why Geothermal Power?

Energy Independence – National Priority

- **Renewable energy source**
- **Baseload energy source**

Environmentally Friendly

- **Clean, zero emissions**

Government Mandates and Incentives

- **Significant government mandates for green power**
- **Attractive tax incentives**

Why is Geothermal So Attractive?

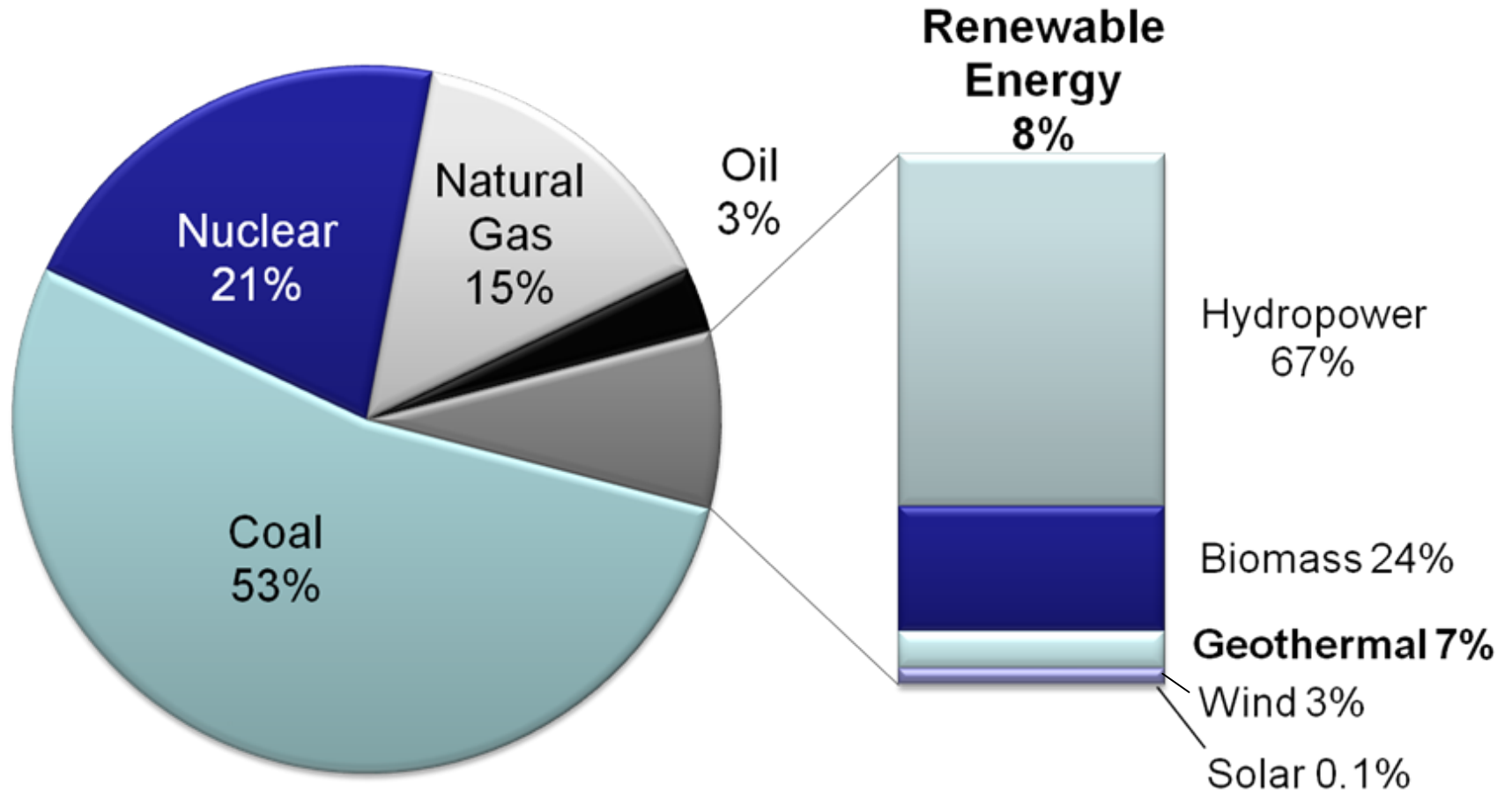
- Technology advancements permit broader application
 - Binary cycle technology can generate power from water temperatures as low as 165°F
 - Smaller plants now feasible with modular technology
 - Equipment reliability backed by manufacturer
- Renewable energy source with long life expectancy
- Once power plant is built, very low operating costs
Base load power. Operates 24/7
- Environmentally friendly with zero emissions

Geothermal Power is Proliferating

- 8,217 megawatts installed capacity worldwide in 22 countries
- U.S. is largest producer with 2,800MW
- Rate of U.S. expansion is increasing dramatically
 - Advanced technology permits use of previously unusable geothermal resources
 - Tax incentives offered by federal government
 - Energy independence initiatives taking hold
 - Environmental initiatives increasing
 - States implementing renewable energy requirements

Sources of U.S. Electricity Usage

While Geothermal Currently Represents a Small Part of the U.S. Energy Supply.....



Source: Geothermal Energy Association, April 2007. 2003 Data



US Geothermal Potential is Substantial

..... An MIT study concludes that geothermal energy could become a major part of the domestic U.S. energy supply

2006 Actual Geothermal Power Production² (MWe)	Potential Geothermal Power Production^{1,3} (MWe)	% of Estimated Total Power Production³
2,800	100,000	10%

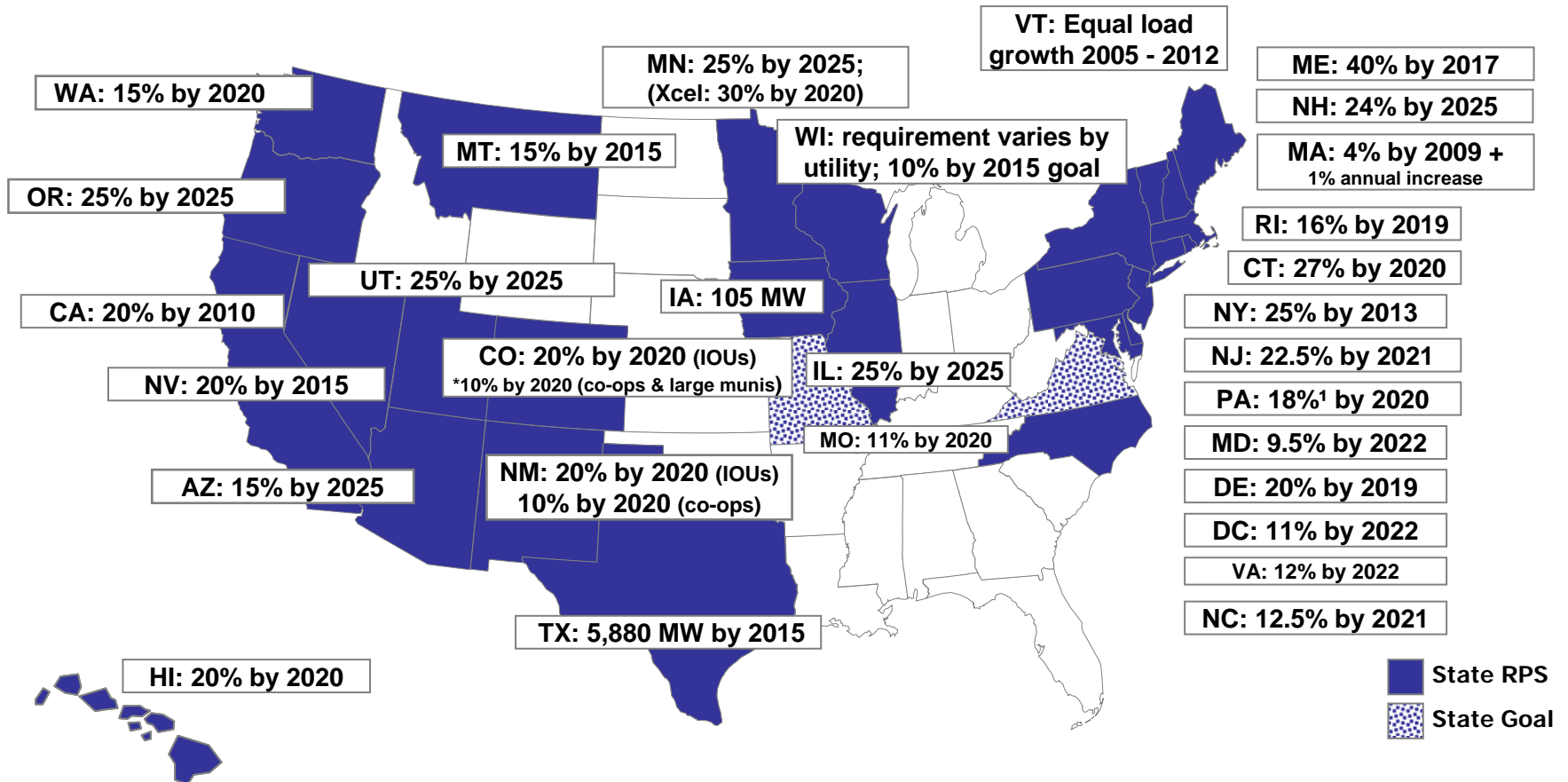
¹ Assumes a “modest, multi-year federal investment for R&D”

² Source: “Geothermal--The Energy Under Our Feet,” National Renewable Energy Laboratory 2006

³ Source: “The Future of Geothermal Energy,” Massachusetts Institute of Technology, 2006

Renewable Portfolio Standards Drive Demand

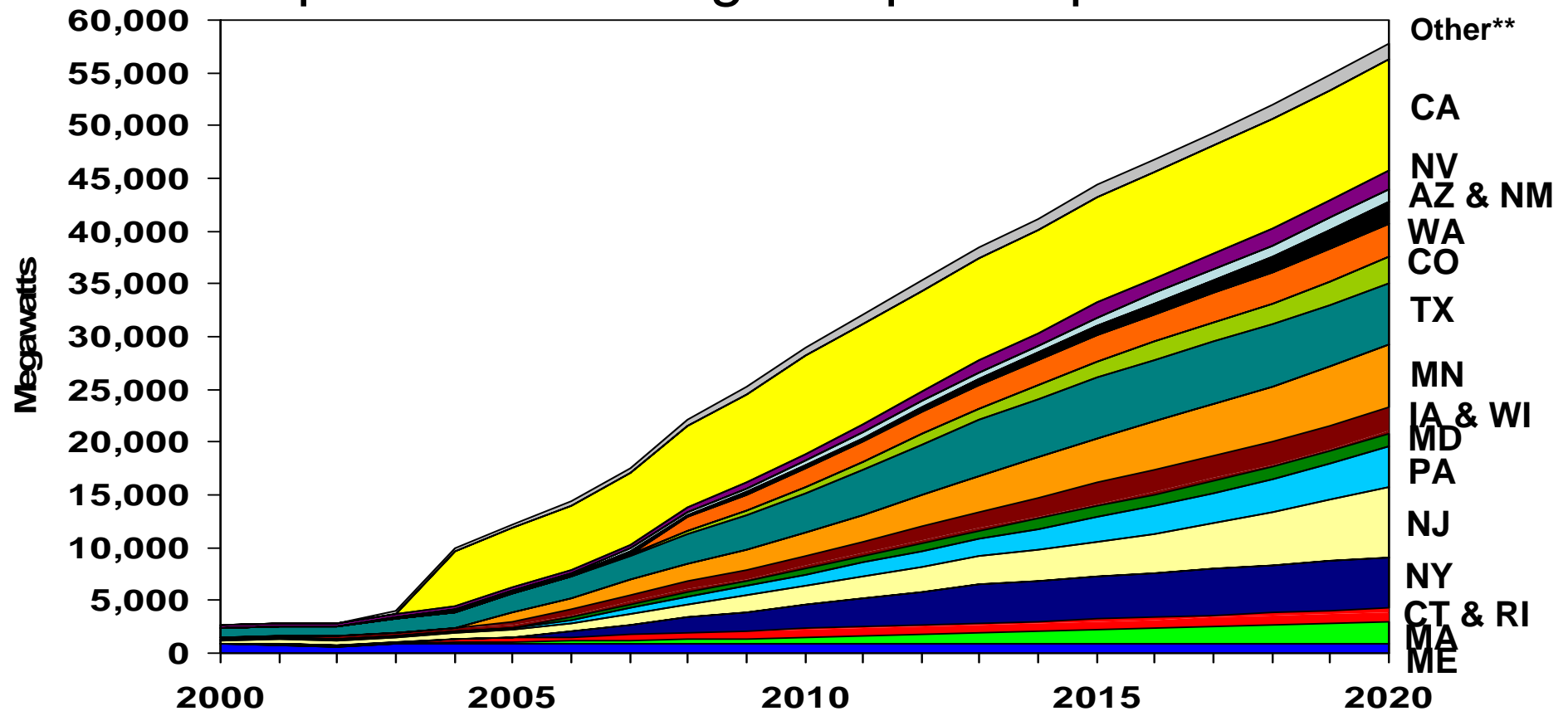
29 States + District of Columbia



¹PA: 8% Tier I / 10% Tier II (includes non-renewables)

Renewable Energy Demand from RPS Mandates

Cumulative RPS mandates will require more energy to be produced from green power plants




*Projected development assuming states achieve annual renewable energy targets.

**Includes Delaware, Hawaii, Illinois, Montana, Ohio, Oregon, and Washington D.C.

Source: Union of Concerned Scientists

Avoided Emissions Per 1 MW

	Annual Avoided CO ₂ Emissions		Annual Avoided NO _x Emissions	
	Tons	Equivalent acres of forest*	Tons	Equivalent number of cars**
Geothermal - Binary <i>(95% availability)</i>	6,045	1,270	10.80	570
Wind <i>(25% availability)</i>	1,585	335	2.86	150
Solar <i>(14% availability)</i>	885	185	1.60	85

* Each acre of forest assumed to absorb 1.3 tons Carbon/acre/year (Ref: International Panel on Climate Change)

** Each car assumed to generate 38 lbm/NO_x/year (Ref: US EPA)

Assumes full heat utilization

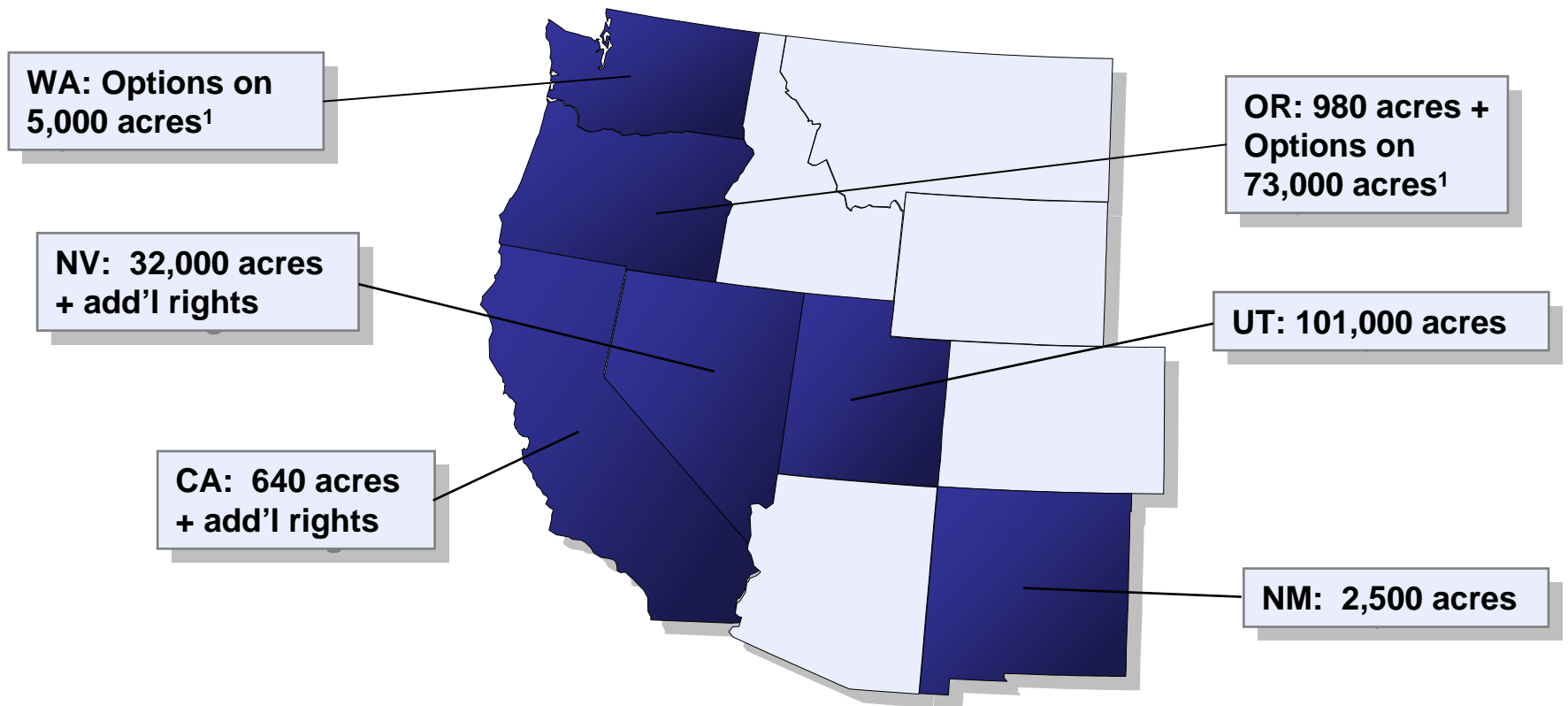
Raser's Geothermal Strategy

Raser's approach is designed to reduce risk and better ensure success “by winning the game with singles and doubles rather than trying for home runs every time”

- ◆ Exploit more prevalent, lower temperature geothermal resources, using binary cycle technology
- ◆ Employ modular, rapid deployment approach to place power plants in service and generate revenues in a fraction of the conventional time
- ◆ Monetize the tax benefits to provide the capital required to develop and construct the power plants

Raser's Geothermal Resource Portfolio

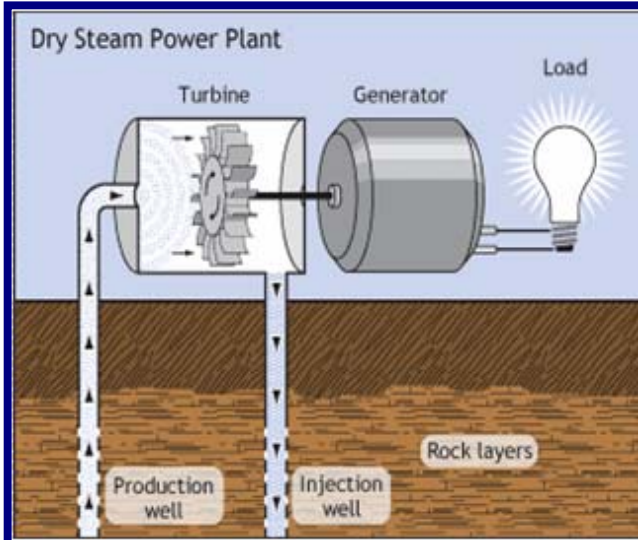
Raser has secured substantial geothermal resources in six states to date



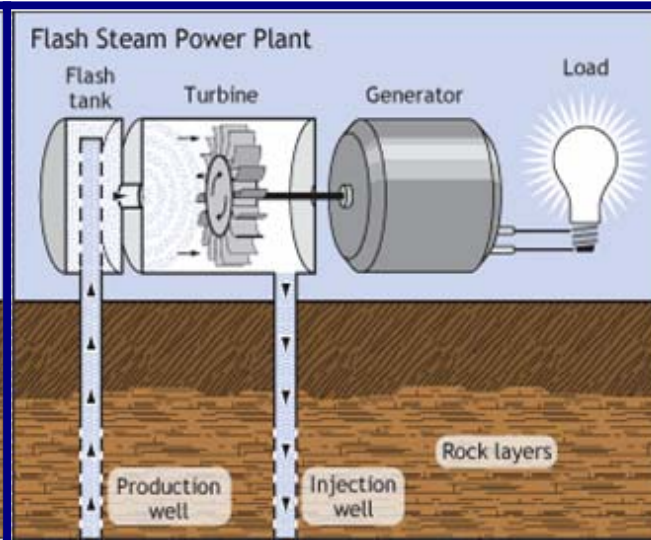
¹Exclusive option awarded to Raser by International Paper

Three Geothermal Technologies

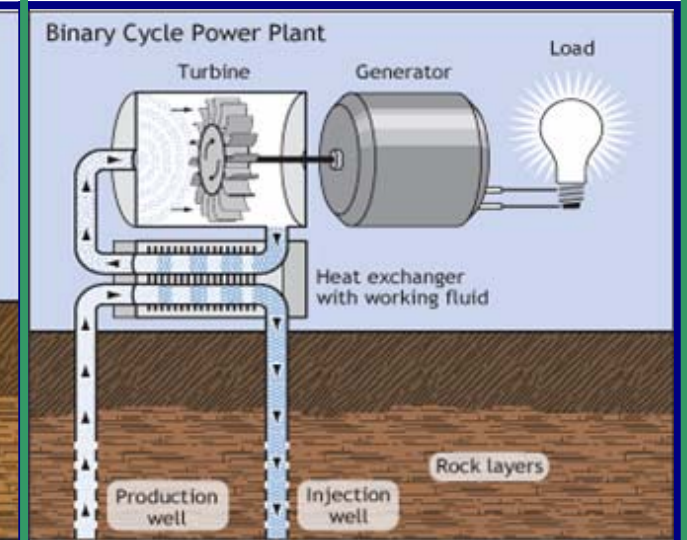
Dry Steam



Flash Steam



Binary Cycle



Drawing Source: U.S. Department of Energy

- Requires high heat
- Corrosive to turbine blades
- Some emission control required
- Some resource depletion over time

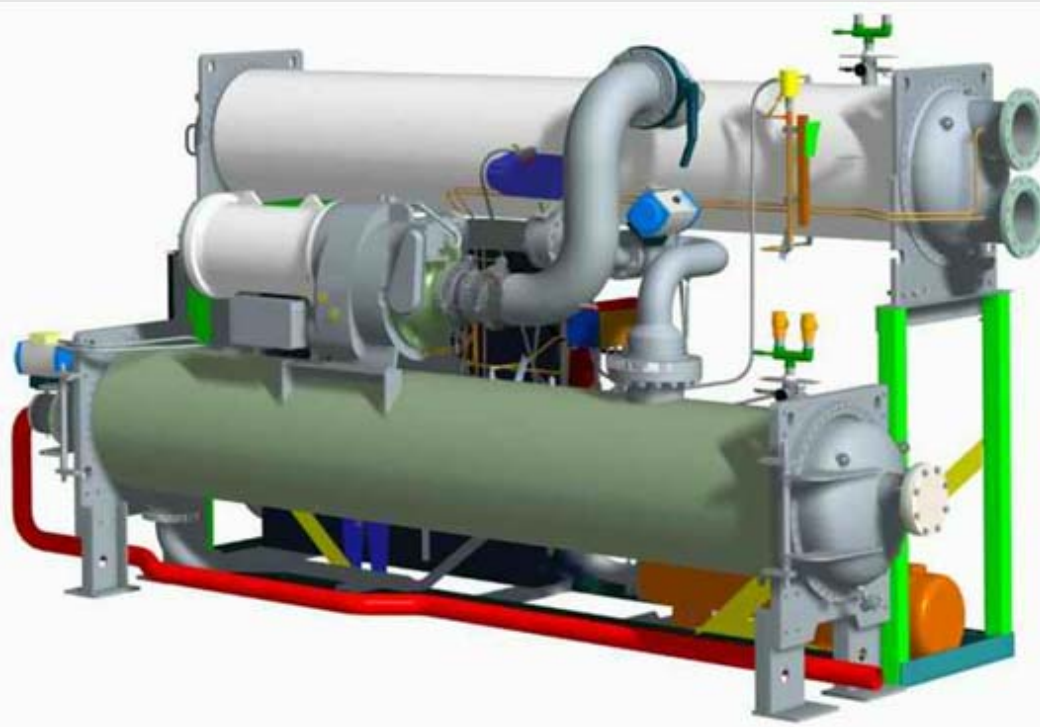
- Requires very hot water
- Corrosive to turbine blades
- Some emission control required

- Newer, proven technology
- Lower heat can be used
- Closed loop, zero emissions
- Non-corrosive to turbine blades

United Technologies Strategic Alliance

UTC Power and Raser formed a strategic alliance facilitating Raser's rapid deployment strategy

UTC Power PureCycle®
280kW Binary Cycle System



- ◆ Annual Revenue, \$54 billion
- ◆ Established, 1934
- ◆ United Technologies companies:
 - UTC Power (geothermal tech)
 - Carrier (HVAC equipment)
 - Pratt & Whitney (aircraft engines)
 - Sikorsky (helicopters)
 - Otis (elevators)
- ◆ UTC Power guarantees performance of PureCycle binary cycle power generating units

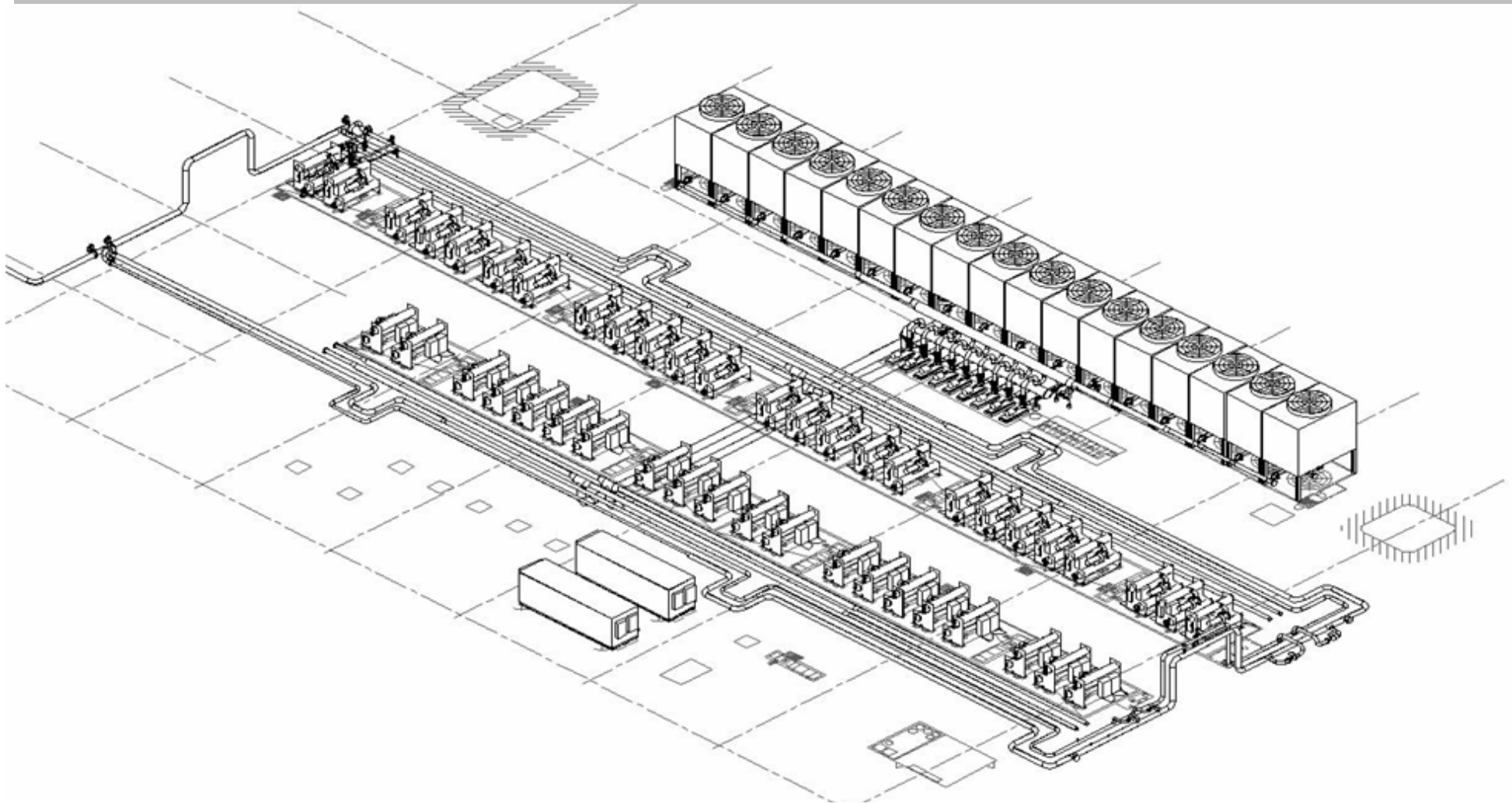
Raser's UTC PureCycle Advantage



- Mature “Off the Shelf” technology – New application
 - Based on the Carrier 19XR Centrifugal Chiller, in reverse (ORC)
- World-class manufacturing capacity
- Existing supply chain and economies of scale (lower costs)
 - 90% of components based on Carrier and Carrier supply chain
- Pre-manufactured and tested then shipped skid-mounted to site
- On-site connection to wiring and plumbing



Raser 10MW Modular Power Plant



Raser's modular design allows flexibility and provides for the rapid deployment approach

Raser's Rapid Deployment Strategy

Conventional Technology, Sequential Approach

- ◆ Permit site
- ◆ Develop well field
- ◆ Design power plant
- ◆ Order equipment
- ◆ Build power plant
- ◆ Begin selling power
- ◆ **Elapsed time, 3-5 years**






Modular Technology, Simultaneous Approach

- ◆ Permit site
- ◆ Develop well field, build modular power generating units offsite simultaneously
- ◆ Begin selling power
- ◆ **Elapsed time, 12-18 months**



Key Raser Agreements in Place

Strong Strategic Alliance and Other Partnerships To Execute Our Strategy

 <ul style="list-style-type: none"> • Equipment Provider • Technology Sharing Partner <hr/> <ul style="list-style-type: none"> • Revenue: \$54 Billion • Est.: 1934 • HQ: Connecticut • NYSE: UTX 	 <ul style="list-style-type: none"> • Program/Construction Manager • Engineering Oversight <hr/> <ul style="list-style-type: none"> • Revenue: N/A • Est.: 1932 • HQ: Michigan 	 <ul style="list-style-type: none"> • Project Financing <hr/> <ul style="list-style-type: none"> • Revenue: \$11 Billion • Est.: 1914 • HQ: New York • NYSE : MER
 <hr/> <ul style="list-style-type: none"> • 20 year Power Purchase Agreement • 22 MW Capacity 	 <ul style="list-style-type: none"> • Geothermal Resource Identification Partner <hr/> <ul style="list-style-type: none"> • Est.: 1995 • HQ: Utah 	 <ul style="list-style-type: none"> • Resource Partner - Oregon & Washington <hr/> <ul style="list-style-type: none"> • Revenues: \$22 billion • Est.: 1898 • HQ: Tennessee • NYSE: IP

Raser Geothermal Leadership

Raser's Leadership has Deep, Relevant Experience

- ◆ **Brent M. Cook, CEO**
 - Headwaters, 6 yrs, CEO, Architect of Synfuel Plant Monetizations
 - PacifiCorp, 12 yrs, Director of Strategic Accounts
- ◆ **Patrick Schwartz, President**
 - Huntsman Chemical, 25 years, Global business segments
- ◆ **Martin F. Petersen, CFO**
 - Merrill Lynch, 7 yrs, VP of Investment Banking
 - Huntsman, 4 yrs VP of Finance and Treasurer
- ◆ **Steven R. Brown, EVP Construction**
 - Headwaters, 6 yrs, VP Construction and Operations
 - 21 yrs experience in engineering and construction mgmt
- ◆ **Richard D. Clayton, General Counsel & EVP**
 - Holland and Hart, 6 yrs, Partner
 - Geneva, 10 yrs, EVP and Director

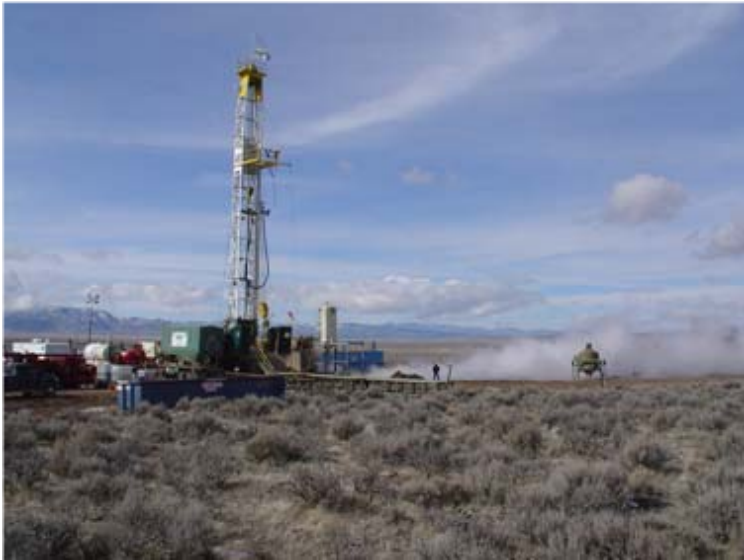
Seasoned Board of Directors

Name / Position	Prior Experience
Kraig T. Higginson Chairman	Founder of Raser, American Telemedia (CEO/President), Lighthouse Associates (CEO/Consultant)
Brent M. Cook CEO/Director	Headwaters (CEO/President), PacifiCorp (Director of Strategic Accounts and others)
Barry Markowitz Director	DTE Energy Services (President), Bechtel Power Systems (V.P.)
Lee Daniels Director	AT&T Japan (CEO), Newbridge Capital, Japan (President)
James Herichoff Director	American Talc Co. (CEO), ARCO (Mining executive), Headwaters (Board member)
Alan Perriton Director	General Motors (Senior executive roles, including President, GM Korea).
Reynold Roeder Director	Deloitte & Touche (tax focus), PacificCorp Financial Services (V.P. and Controller)

Raser Geothermal Projects

- Years 1 – 3, initiate development on 100 MW per year
- Thereafter, initiate development on 150 MW per year
- Status: 8 Projects announced for total of 80 – 85 MW
 - Utah: 3 Projects
 - Nevada: 3 Projects
 - New Mexico: 1 Project
 - Oregon: 1 Project

Thermo, UT



- 10 MW Plant net
- First well completed - water temperatures well in excess of 260°F
- Additional drilling started this week: expect 3 production, 4 injection
- Construction to begin in May

Lightning Dock Geothermal, NM



- 10 MW (net) Phase 1, additional 10 MW for 20 MW total
- First commercial geothermal power plant in NM
- Blind resource
- Over 40 wells drilled with over 25 years of data
- Split Estate: BLM Geothermal Lease / Private Surface
- Existing production-capable well with temperatures of 285°F – 300+°F
- Air-lift test completed last week, temperatures in expected range