

**HEAT IS POWER...**

**LET'S CAPTURE IT.**



## Organic Flash Cycle (“OFC”)

### C2M Team

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Paul Maa, MBA 2013

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### Scientist

Tony Ho, PhD Mechanical Eng. 2012

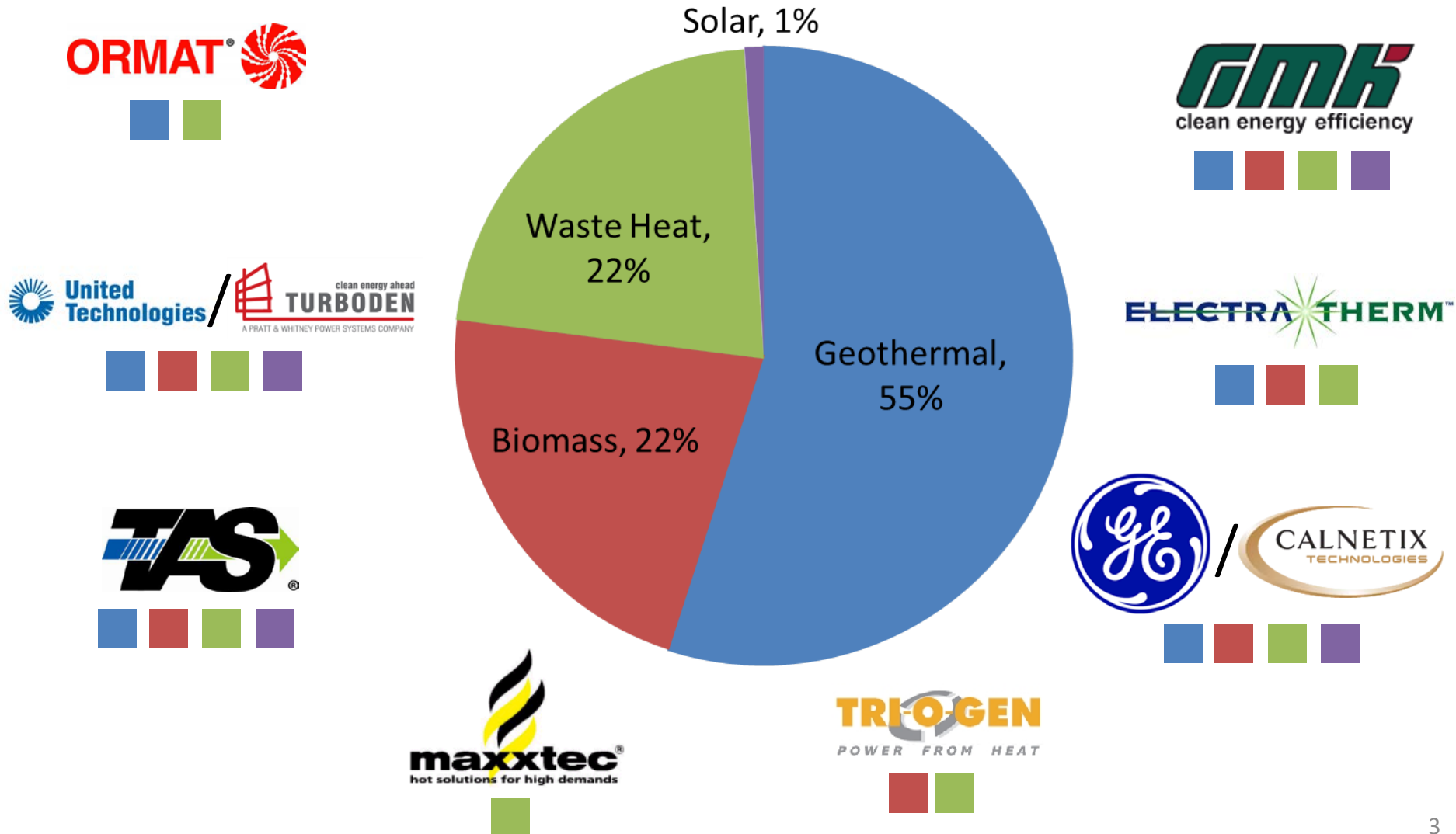
# A Massive Opportunity in Heat-to-Power



**= 2,000,000 GWh / Year in U.S. Alone**

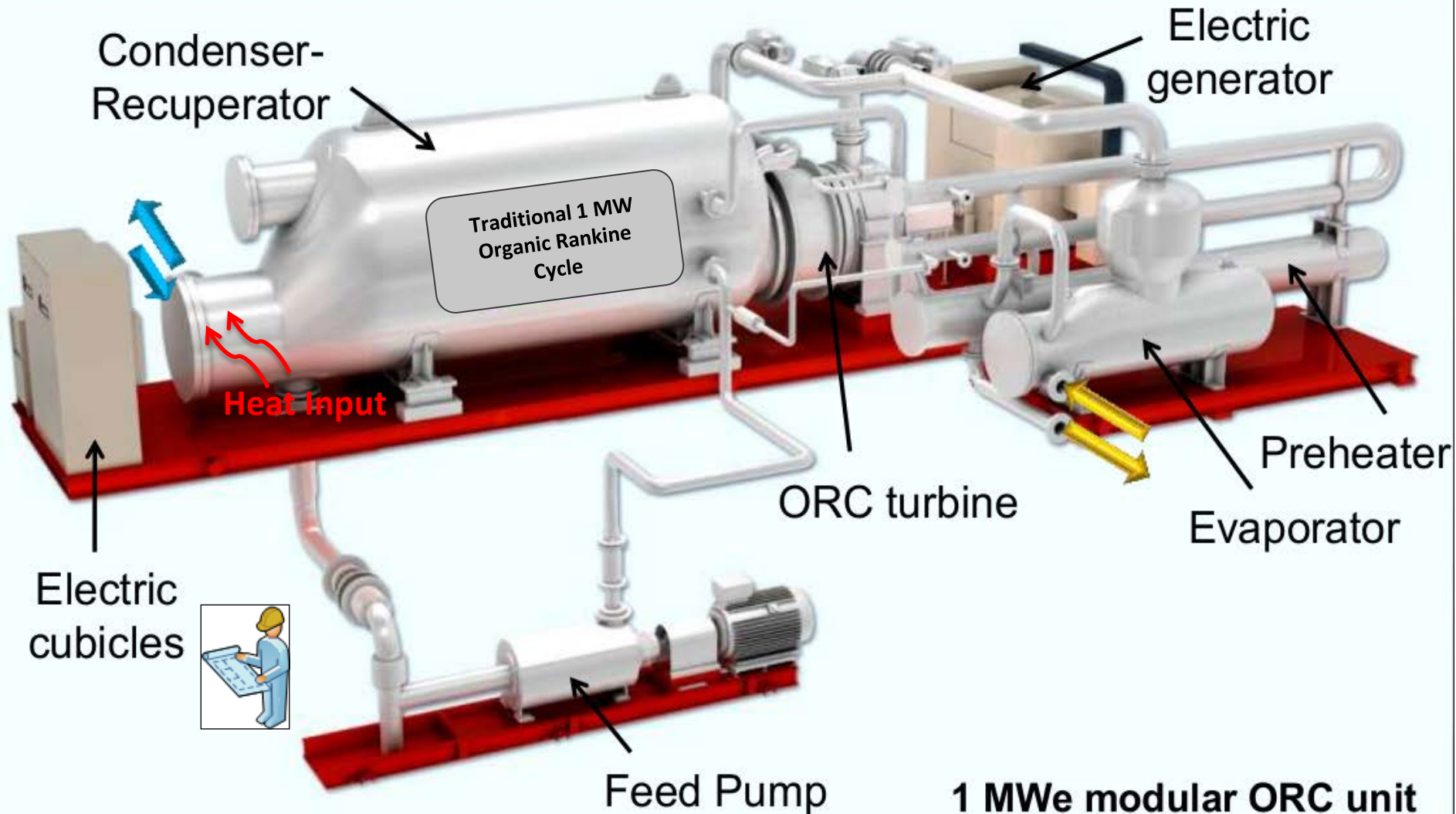
# Global Markets Served By Organic Rankine Cycle

1+ GW of ORC technology installed by multiple players across multiple markets

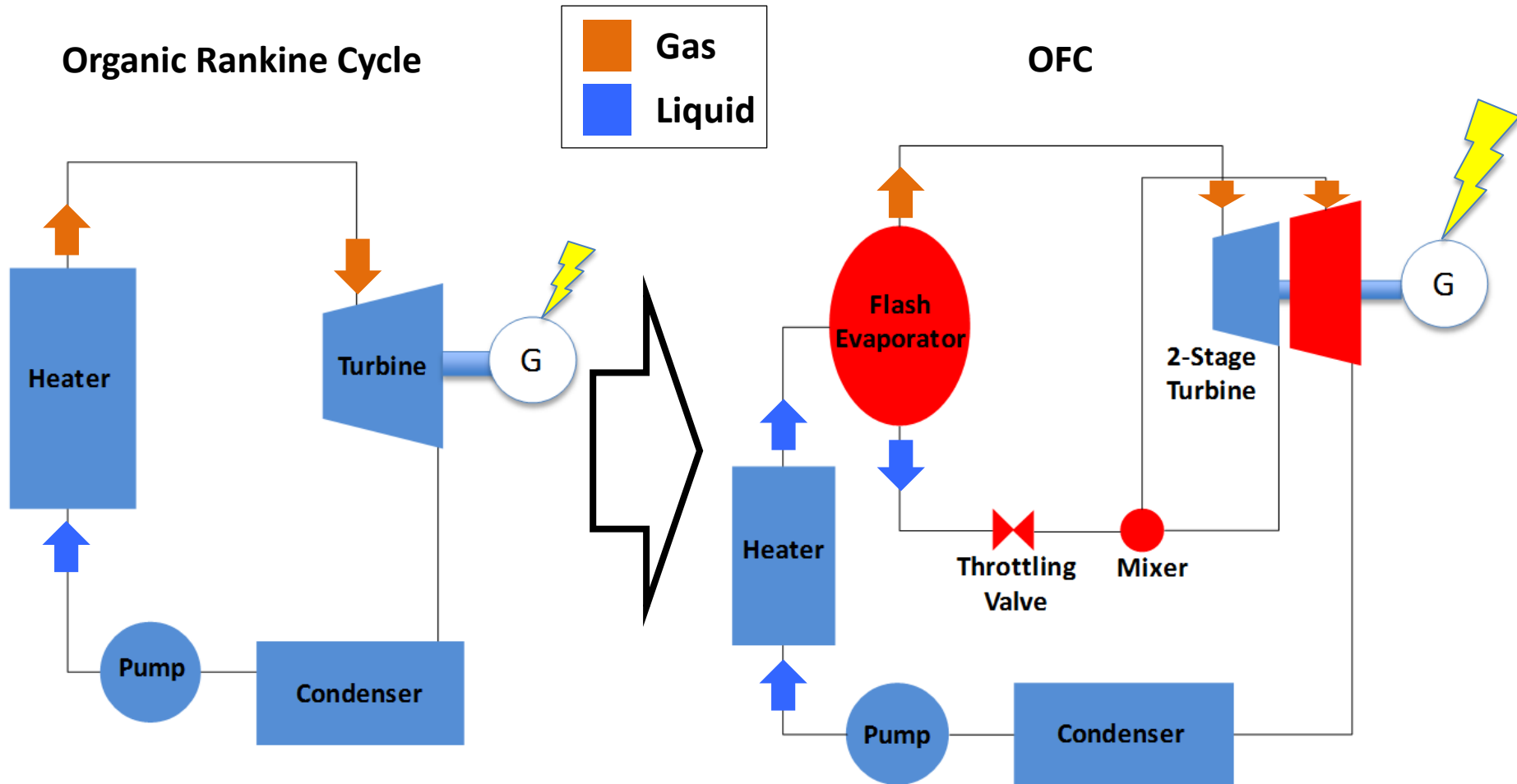


Note: Team Estimates. Global Market Share, by Total Power

# Incumbent Technology: Organic Rankine Cycle

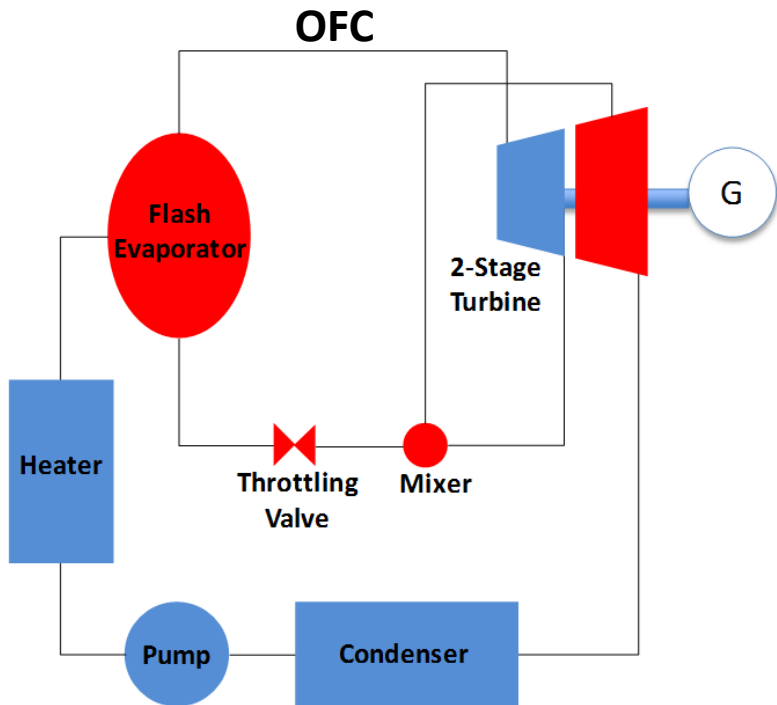


# Technology Overview: Our Technology OFC



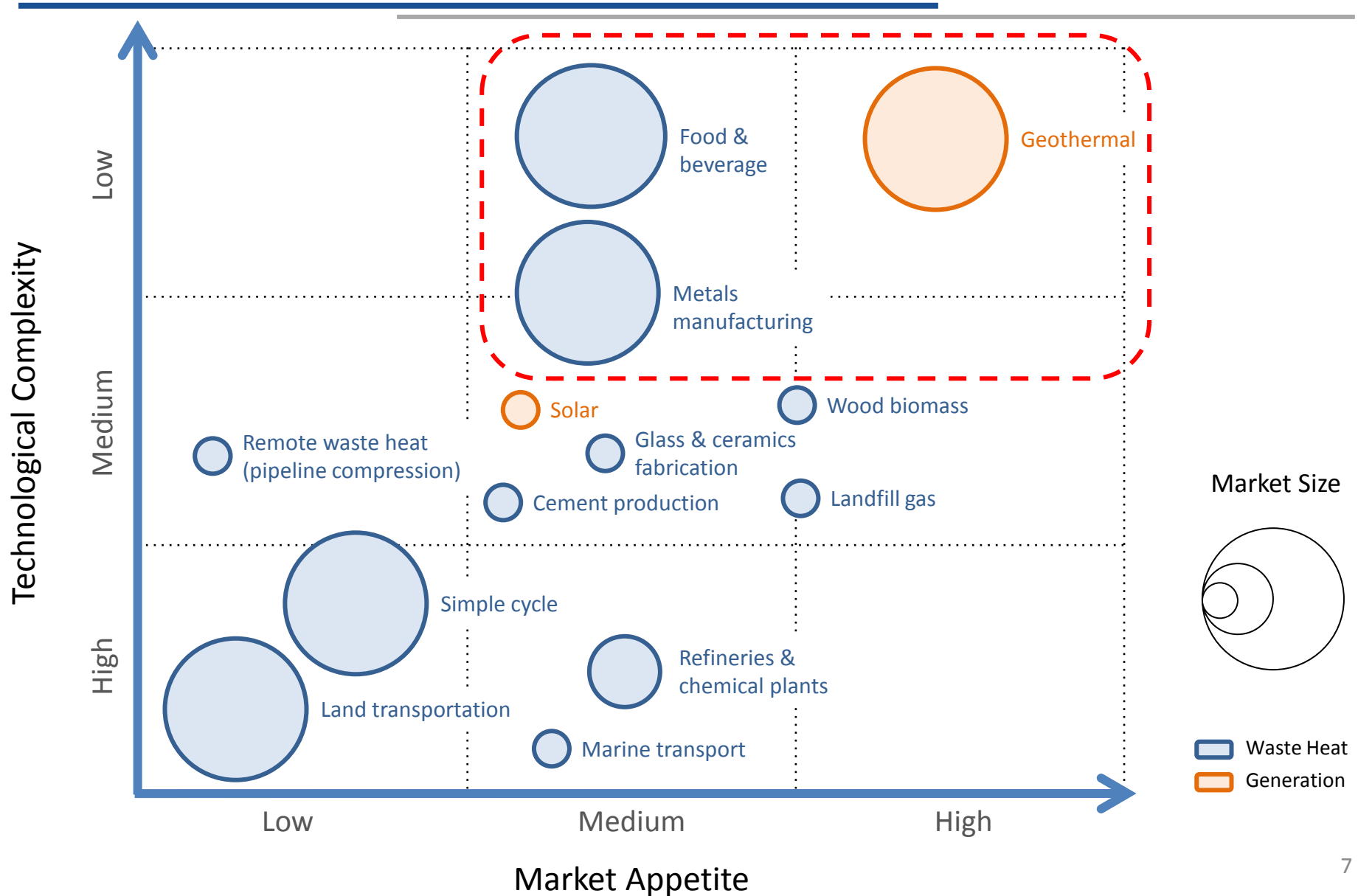
# Technology Overview: Our Technology OFC

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The OFC is  
**10% more efficient,**  
**5% cheaper,**  
and all the components  
are **readily available.**

# Market Assessment



# Market Attractiveness

Market Segment	Projected Growth	Competitive Pressure	Available Incentives
Geothermal	9.5% CAGR	>50 Installations	US Federal & EU Incentives
Metals Manufacturing	<5.5% CAGR	<15 Installations	US State-by-State & EU Incentives
Food & Beverage	3.5% CAGR	<15 Installations	US State-by-State & EU Incentives

## Attractiveness



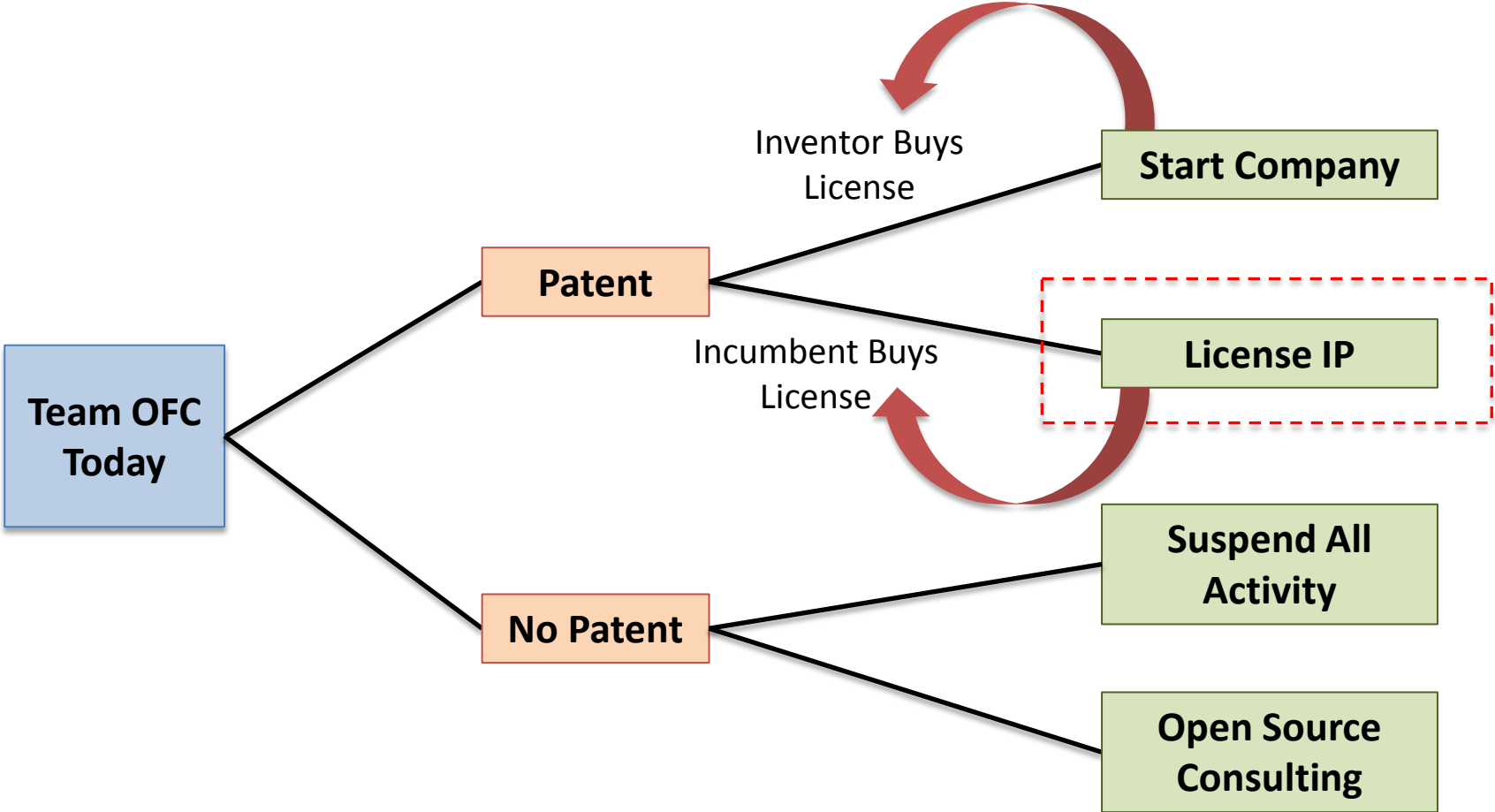
### Sources:

EBC Energy Research (EER)  
 Global Energy Industry Global Report (2010)  
 Global Metal Industry 2012-2017



# Path to Market

## Range of Available Options



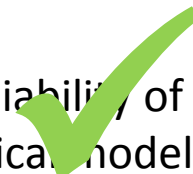
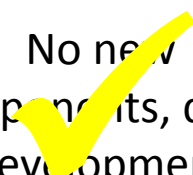
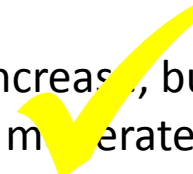
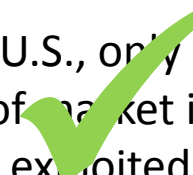
# Prospective Partners for Licensing



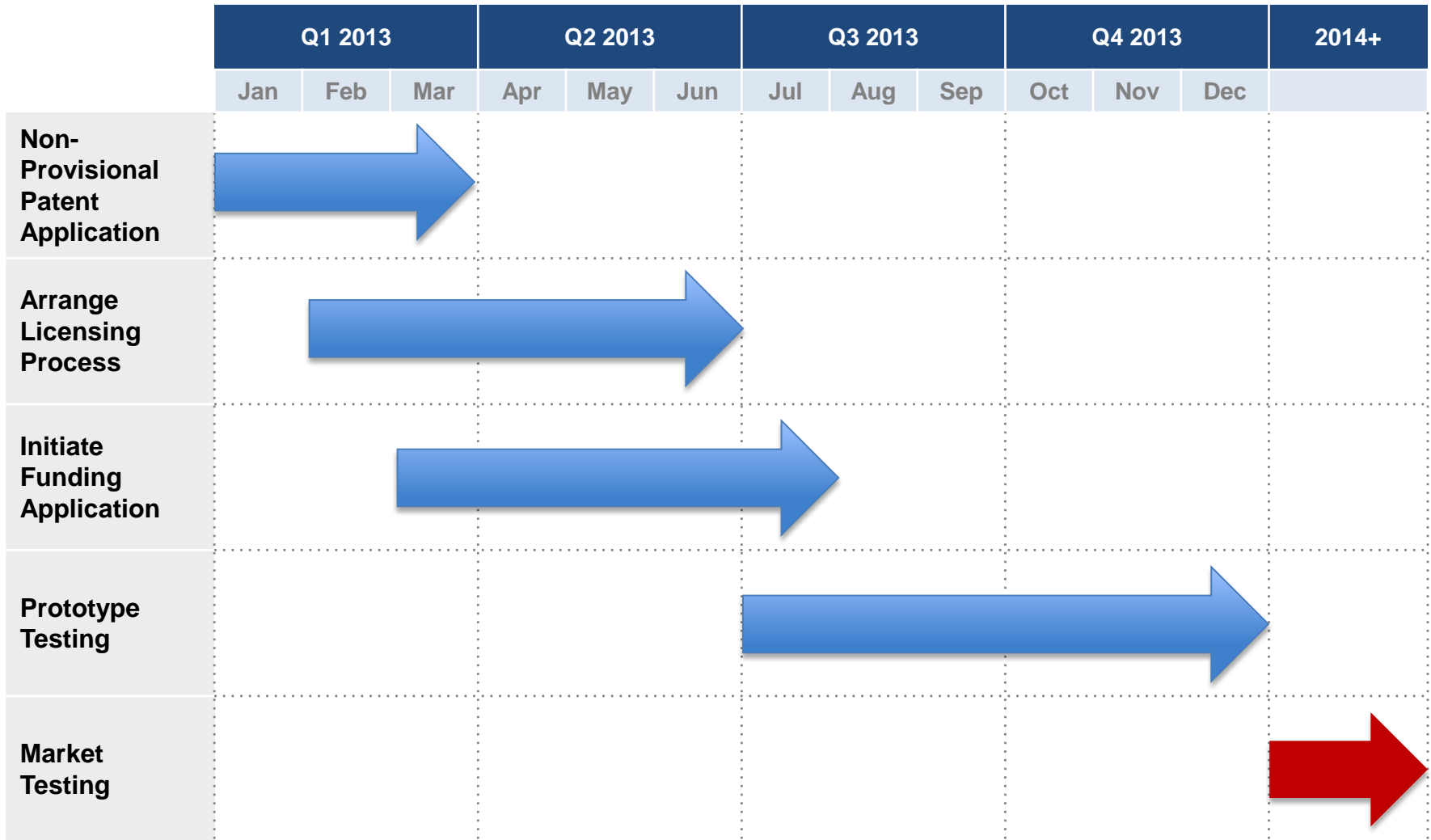
	GE	ORMAT	TAS
Licensing Appetite	Green	Red	Green
Dedicated Group for Transition	Green	Yellow	Green
Degree of Overlap with Identified Markets	Yellow	Green	Yellow
Company Growth Prospects	Green	Yellow	Yellow

Having detailed conversations with these potential partners post C2M

# Risks & Mitigants

Risk	Description	Mitigant
Technology Development	Technology is not proven yet	Reliability of the physical model used 
Incumbent Technology	Competitors to OFC are under development	No new components, quick development 
Lifecycle Costs	O&M costs are potentially higher for OFC	Increase, but moderate 
Sales Cycle	Organic Rankine Cycle useful life is 20+ years	In U.S., only 7% of market is exploited 

# Proposed Timeline



■ LBNL/Scientists
 ■ Licensee Company

# Key Takeaways

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Compared to a 1MW Organic Rankine Cycle system, the OFC is:

- ❖ Cheaper by 5%
- ❖ 10% more efficient
- ❖ Comprised of readily available components

**Heat is Power...Let's Capture It!**

Thank You!

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**Q&A**