

Delta Energy & Environment Ltd
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Global Distributed Power Markets: What is the outlook for gas engines?

9th April 2015

DistribuGen Conference

John Murray

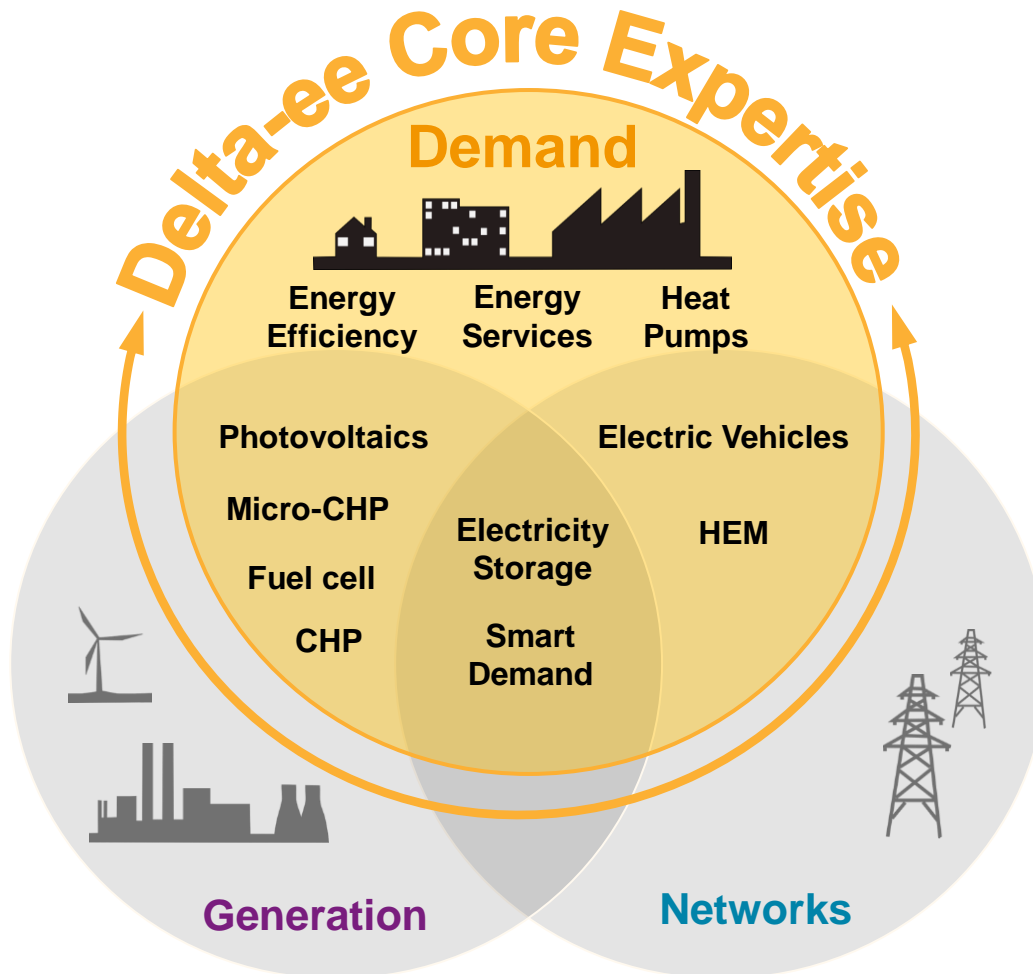
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www.delta-ee.com

A consultancy and research provider specialising in decentralised energy



Delta-ee provides:

- ▶ Market insight & forecasts
- ▶ Techno-economic analysis
- ▶ Competitor analysis
- ▶ Strategy & tactics

Clients:

- ▶ Energy companies
- ▶ Manufacturers
- ▶ Finance sector
- ▶ Policy makers

What Delta-ee offer to clients:

- ▶ Research Services
- ▶ Multi-client Studies
- ▶ Consultancy
- ▶ Specialist Summits

Some past and existing Delta-ee clients



- 1. Context setting**
- 2. Germany: a case study**
- 3. USA trends**
- 4. Global trends**

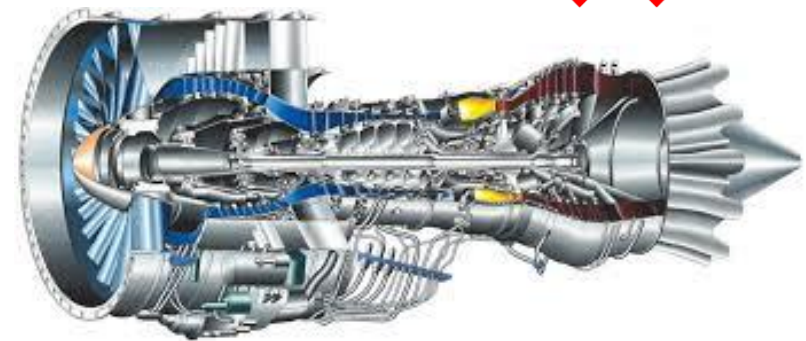
Gas engines used in stationary power applications



Gas engines



Gas turbines



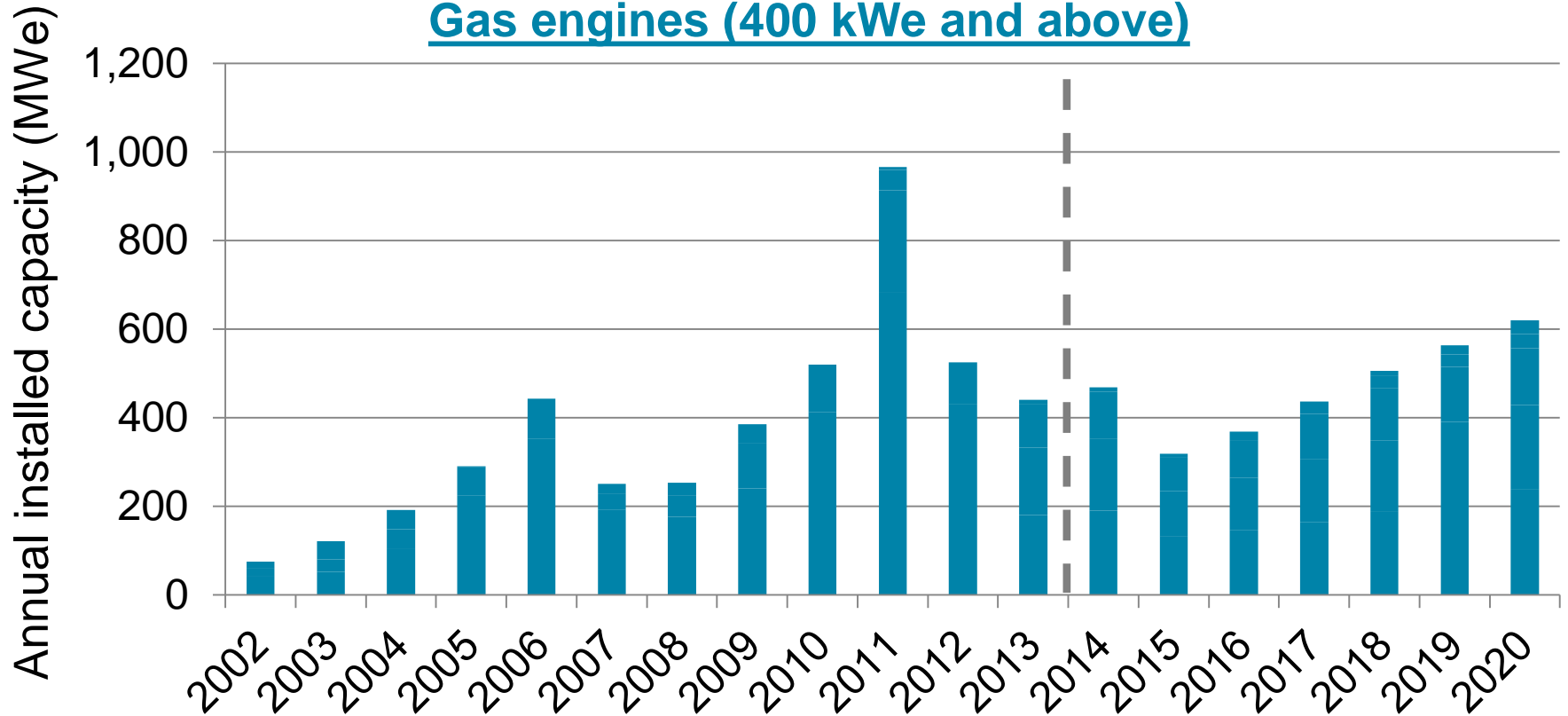
All fuel types



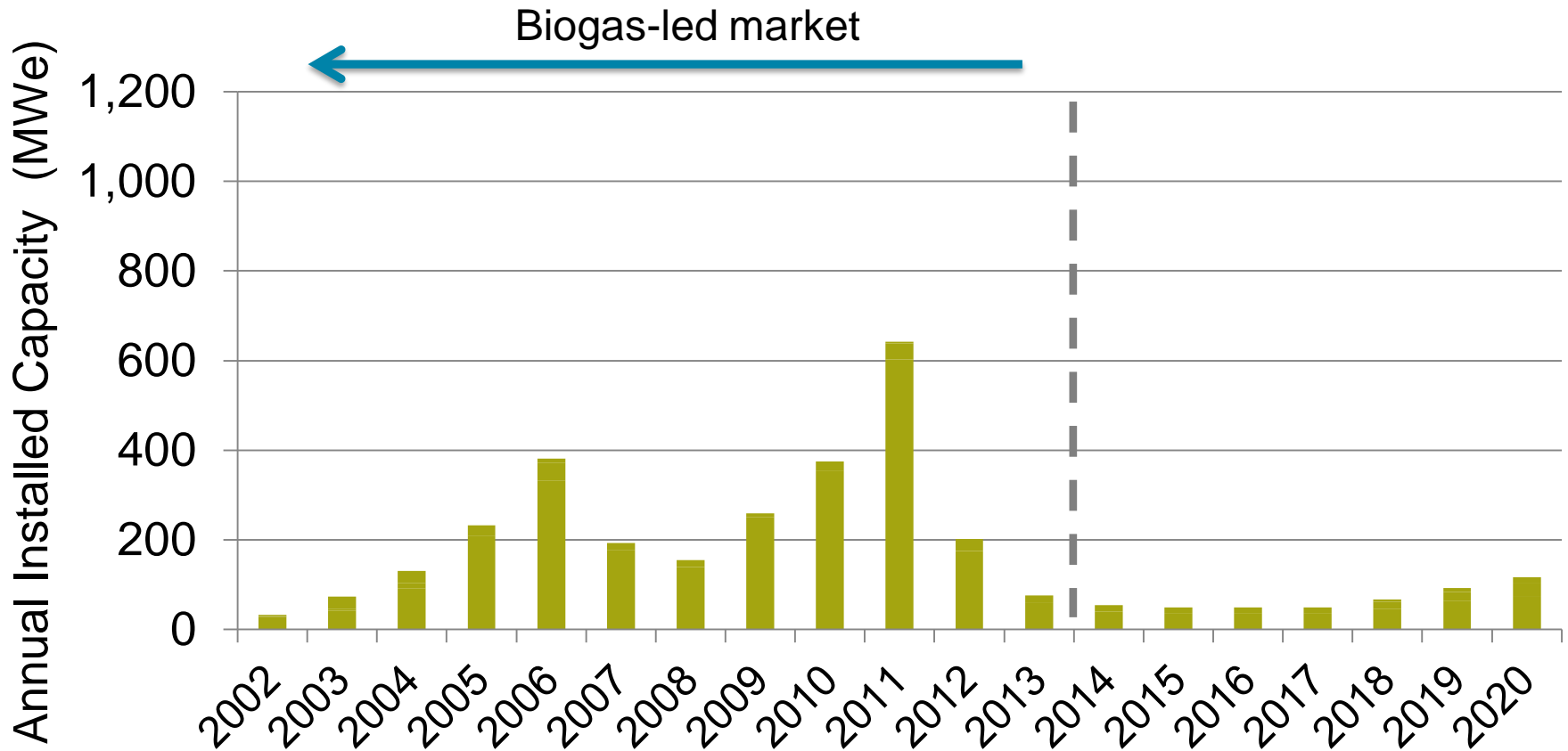
Non-stationary
power applications



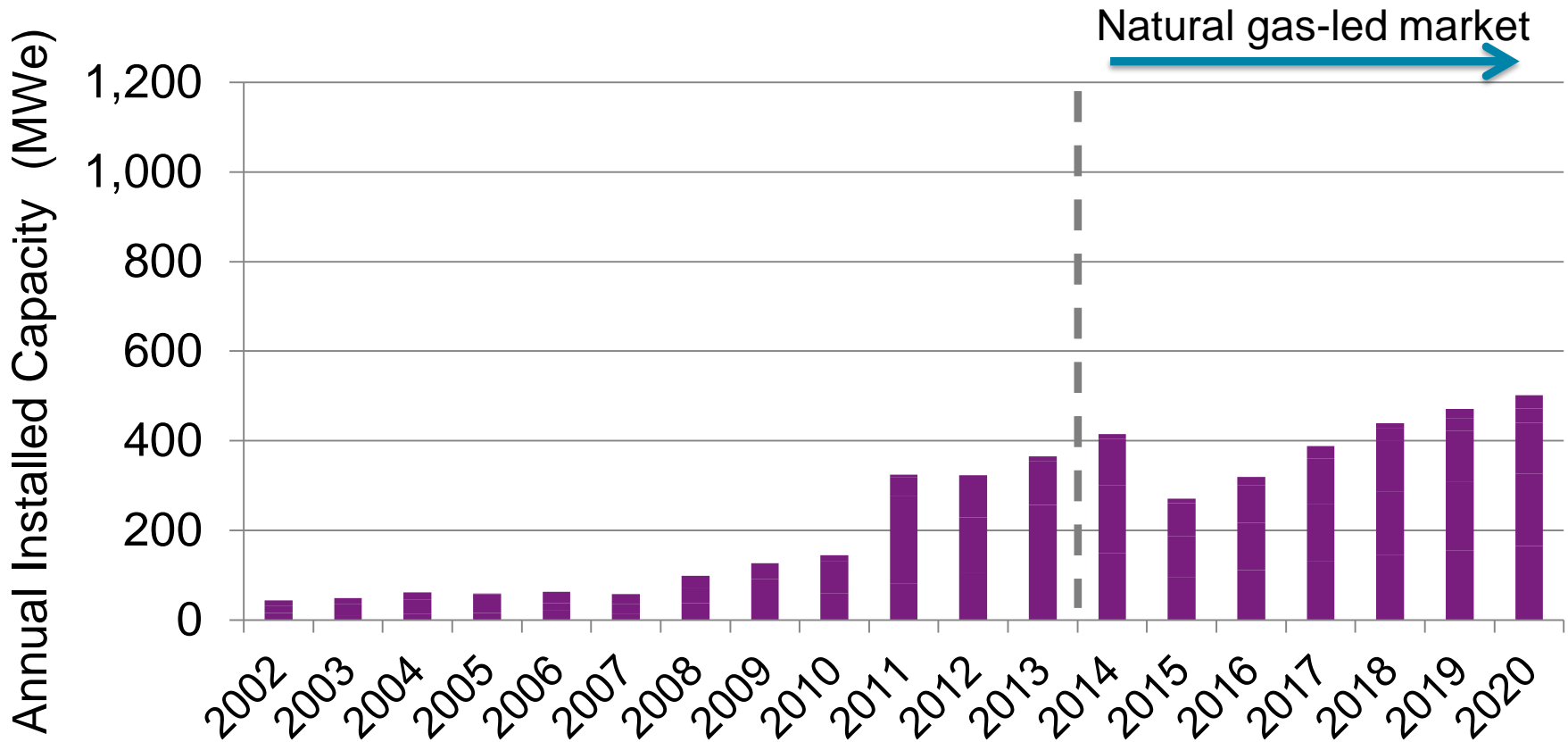
Gas engines (400 kWe and above)



Germany - biogas



Germany – natural gas



USA gas engine market

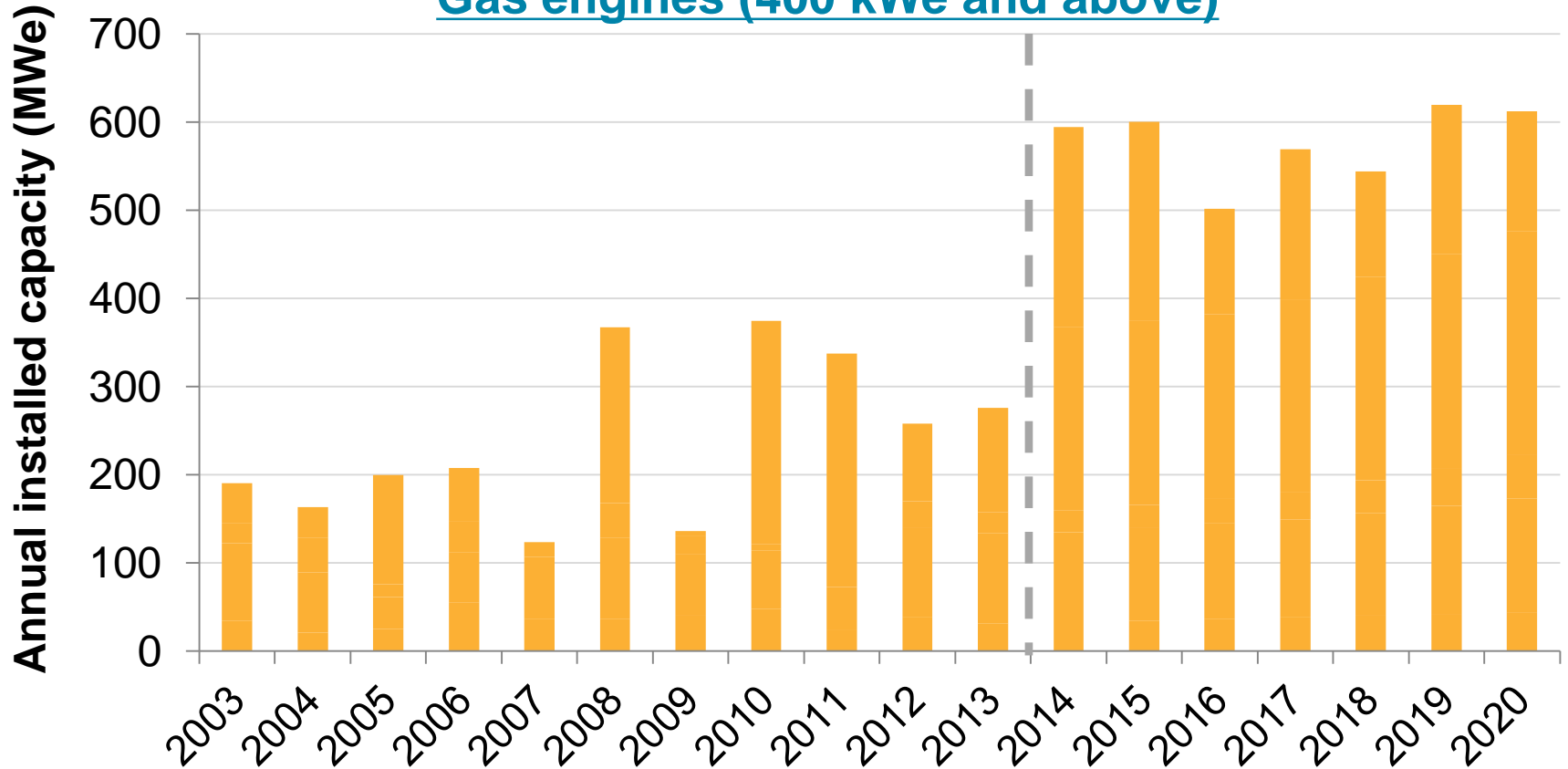
	CA	CT	IL	MA	NJ	NY	OH	OR	PA	TX	WA
Future spark spreads (>3 ratio)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>	
Supportive CHP policy	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Prone to black outs	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
High penetration of intermittent renewables	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Likely Top States:

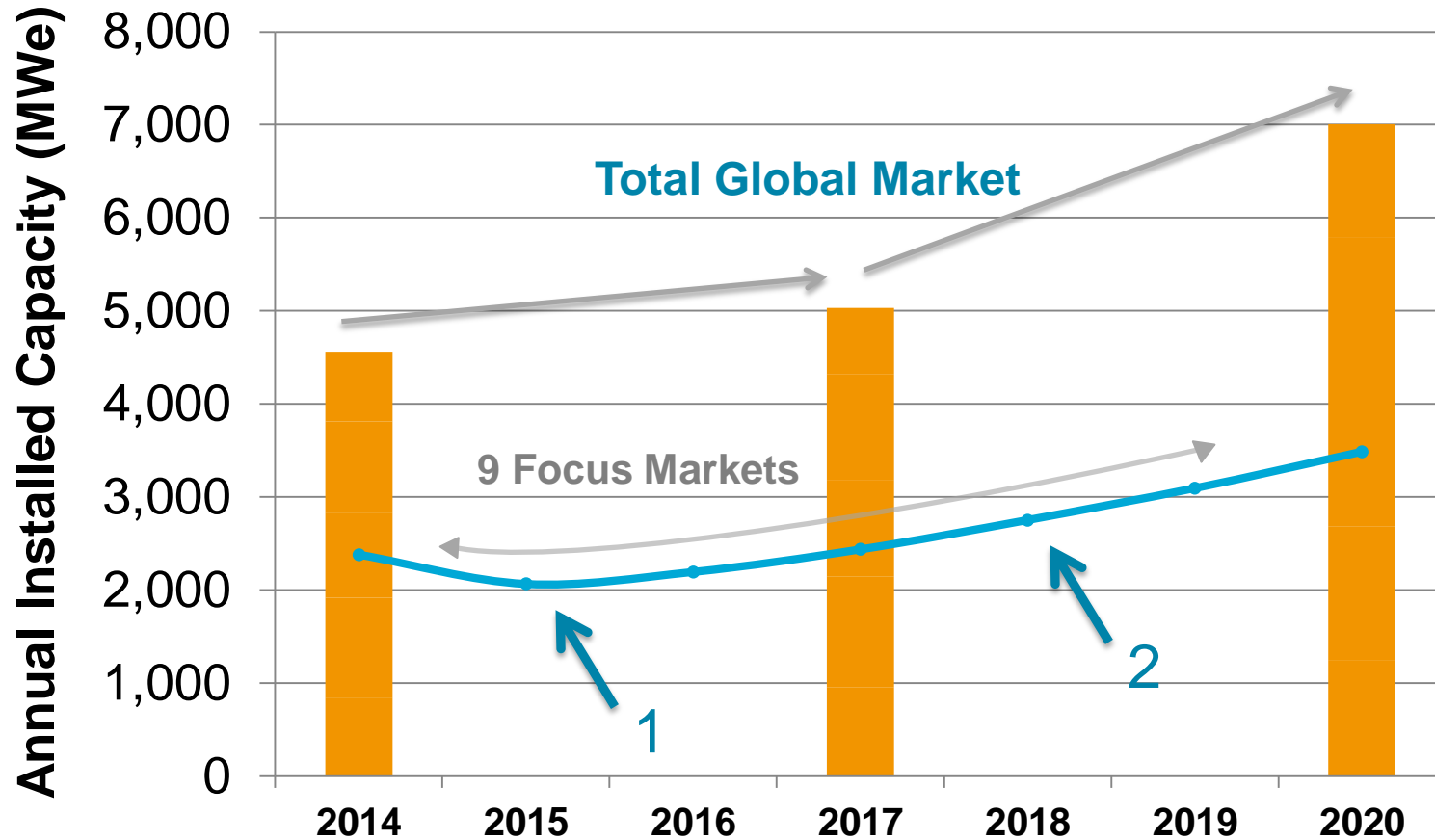
California, Connecticut, Illinois, Massachusetts, New Jersey, New York, Ohio, Oregon, Pennsylvania, Texas, Washington

USA – historic & future gas engine sales

Gas engines (400 kW and above)



Global Gas Engine Market: Annual Installed Capacity



9 Focus Markets: Brazil | China | Germany | India | Japan | Russia | Turkey | UK | USA

1. Market deflation in 2015/2016

- **Stuttering global economy**
- **Uncertainty around future German CHP policy**
- **Sanctions in Russia**

But...

2. Medium to long-term trends look promising

- **Increased natural gas for power generation**
- **Increased renewables**
- **Increased policy support for energy efficiency & renewables**
- **Increased market push & market awareness**

Thank you!

Research taken from Delta-ee's Distributed Power Service

Strong growth forecasts for gas engines, underpinned by several key drivers

Come see me afterwards for a free white paper!

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