



grid of the future:

The Utility Experience in Smart Grid and Smart City Efforts

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AEP Overview

\$63.5

BILLION
ASSETS

\$16.4

BILLION
REVENUE

5.4

MILLION
CUSTOMERS

17,600

EMPLOYEES

11

STATES

1

ISO

2

RTOs

26,000

MW GENERATION

3,200

MW Renewables
to Customers

40,000+ MILES

TRANSMISSION

224,000+

MILES DISTRIBUTION

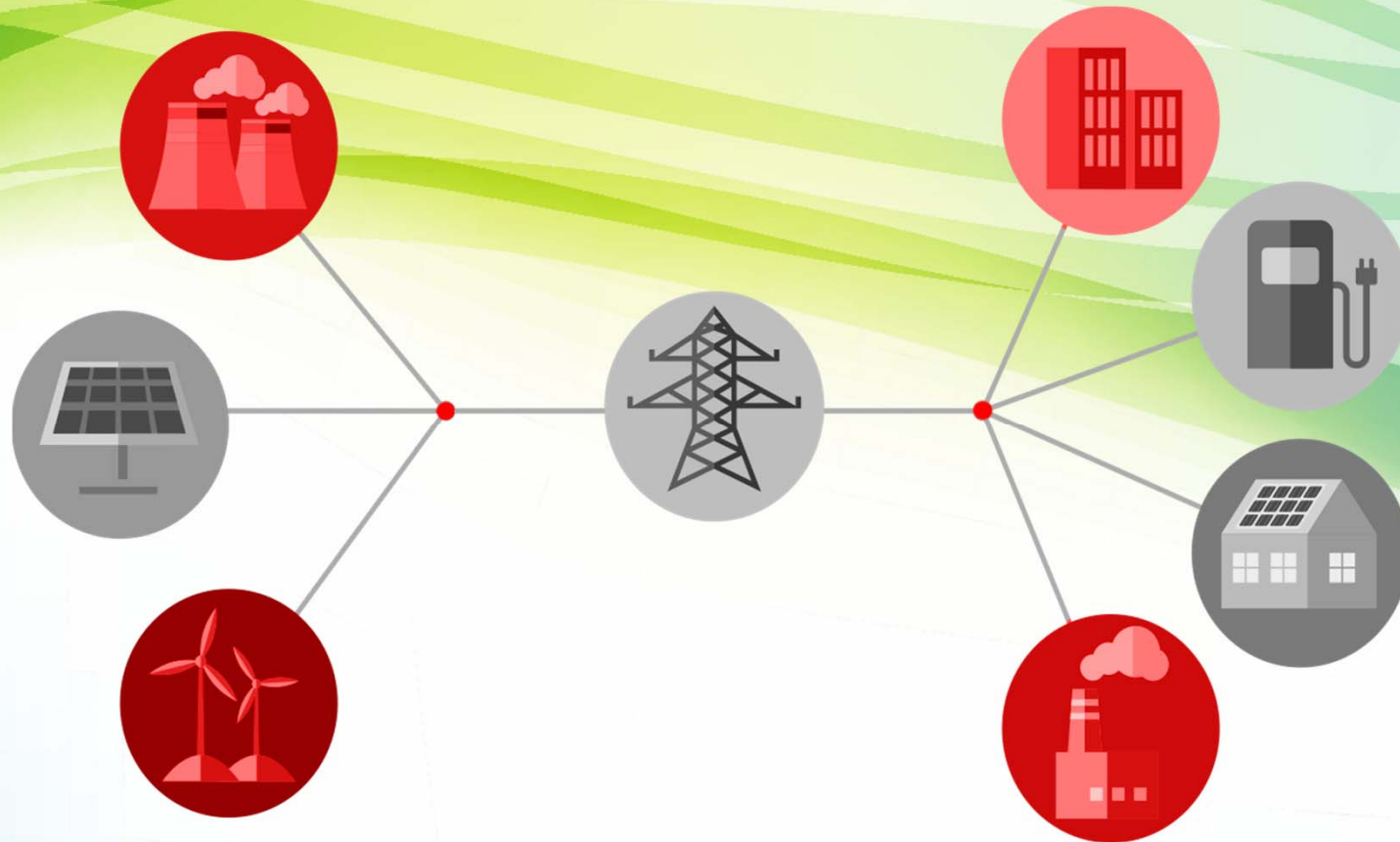
200,000+ SQ.

MILES Service Territory



the traditional one-way grid is being transformed...

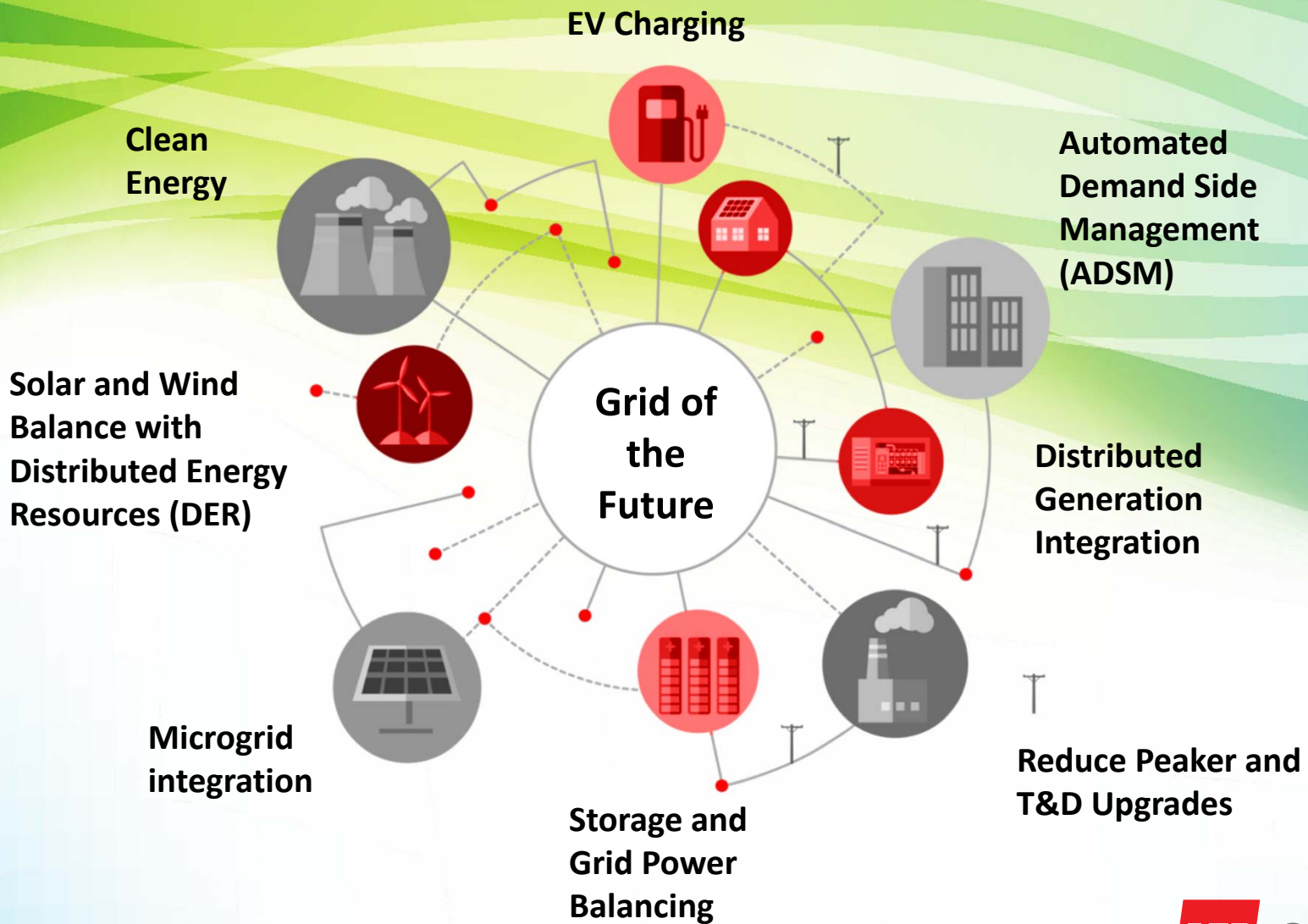
TRADITIONAL GRID



GENERATION

CUSTOMERS

...into an interactive, two-way, intelligent system.



The Grid of the Future



Decentralized

Intelligent devices from substations to customers' homes and premises – Industrial Internet of Things



Digitalized

Network services across multiple platforms providing customers with greater control over energy products and services



Decarbonized

Cleaner, greener more sustainable energy options

What is the Smart City Challenge?



U.S. Department of Transportation

The USDOT has pledged up to \$40M to help Columbus define what it means to be a “Smart City “



A Paul G. Allen Company

Vulcan has pledged \$10M to Columbus to help it increase use of electric and other alternative vehicles with low- or zero emissions



DOT Smart City Challenge

1,400

local officials,
companies, academics and non-
profits joined our webinars

800

people participated
in our Smart City Forum

300

companies have
expressed interest in partnering

78

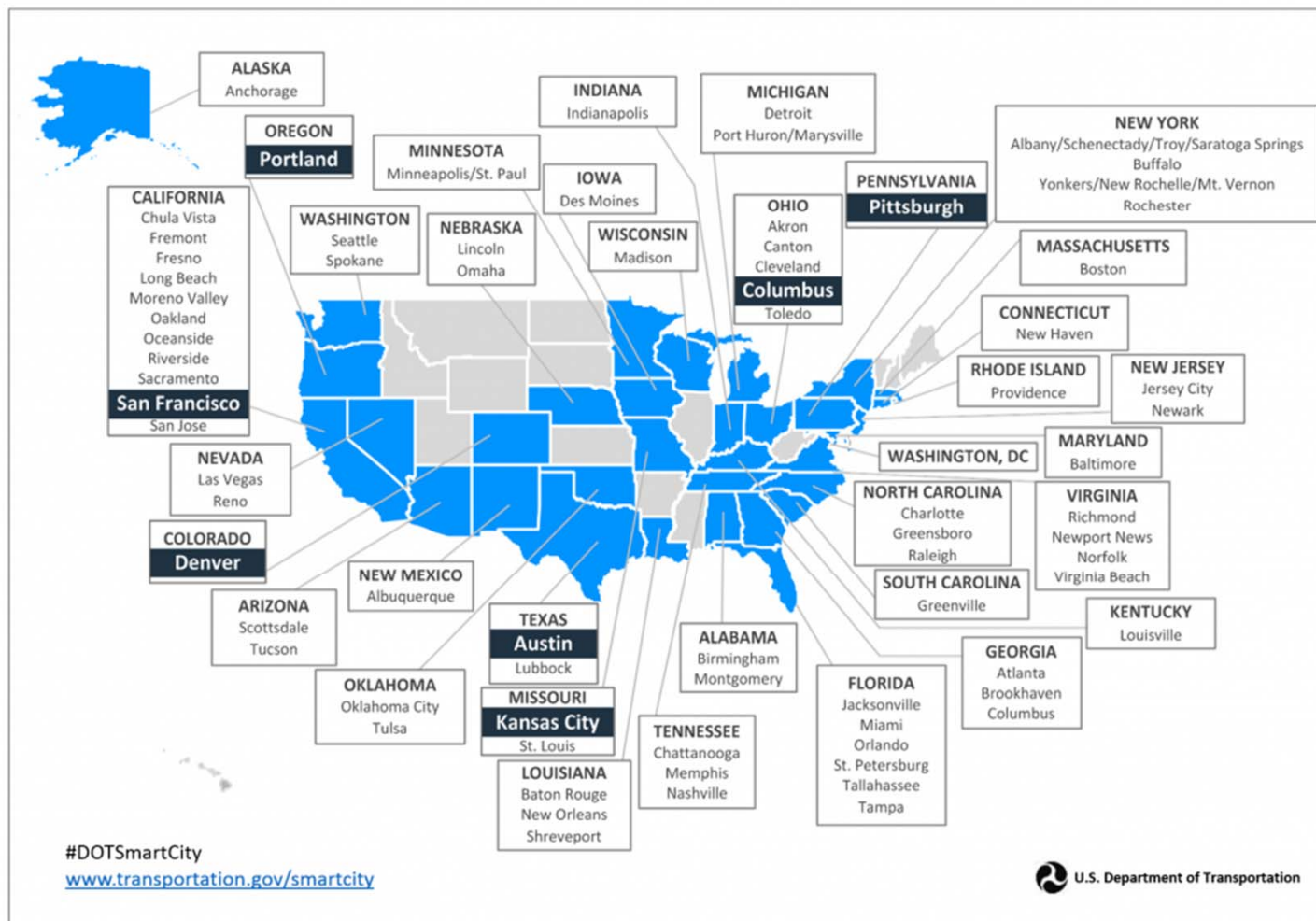
applications
received for the Smart City
Challenge

7

Smart City
Challenge Finalists announced in
March at SXSW

1

Smart City
Challenge Winner announced in June



SMARTCOLUMBUS[®]

Columbus partners helped multiply the money
– an important driver in the award

US Dept. of Transportation	\$40 M
Paul G. Allen's Vulcan Inc.	\$10 M
Smart Cols. Acceleration Fund	<u>\$90.7 M</u>
	\$140.7 M

AEP Ohio's Smart City Initiatives

Projects



8-10 Micro-grids
with Solar and
battery storage



Electric Vehicle Supply Equipment (EVSE)

– AEP Workplace plus

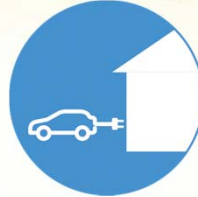
- 250 Level 2 Public Smart Chargers,
- 25 DC Fast Chargers,
- 1000 Residential Chargers



Advance Clean
Energy R & D



Company Fleet
Electrification



Vehicle to Home
Connectivity Research



Energy Efficiency
Programs



Solar & Wind Deployment
-- 900 MW goal



AMI Infrastructure -
562,149 meters



Smart Lighting -
200k locations

AEP Ohio's Smart Grid Program



Distribution Automation Circuit
Reconfiguration
320 Circuits



Volt Var Optimization
177 Circuits



AMI Meters
1M

Questions?

