

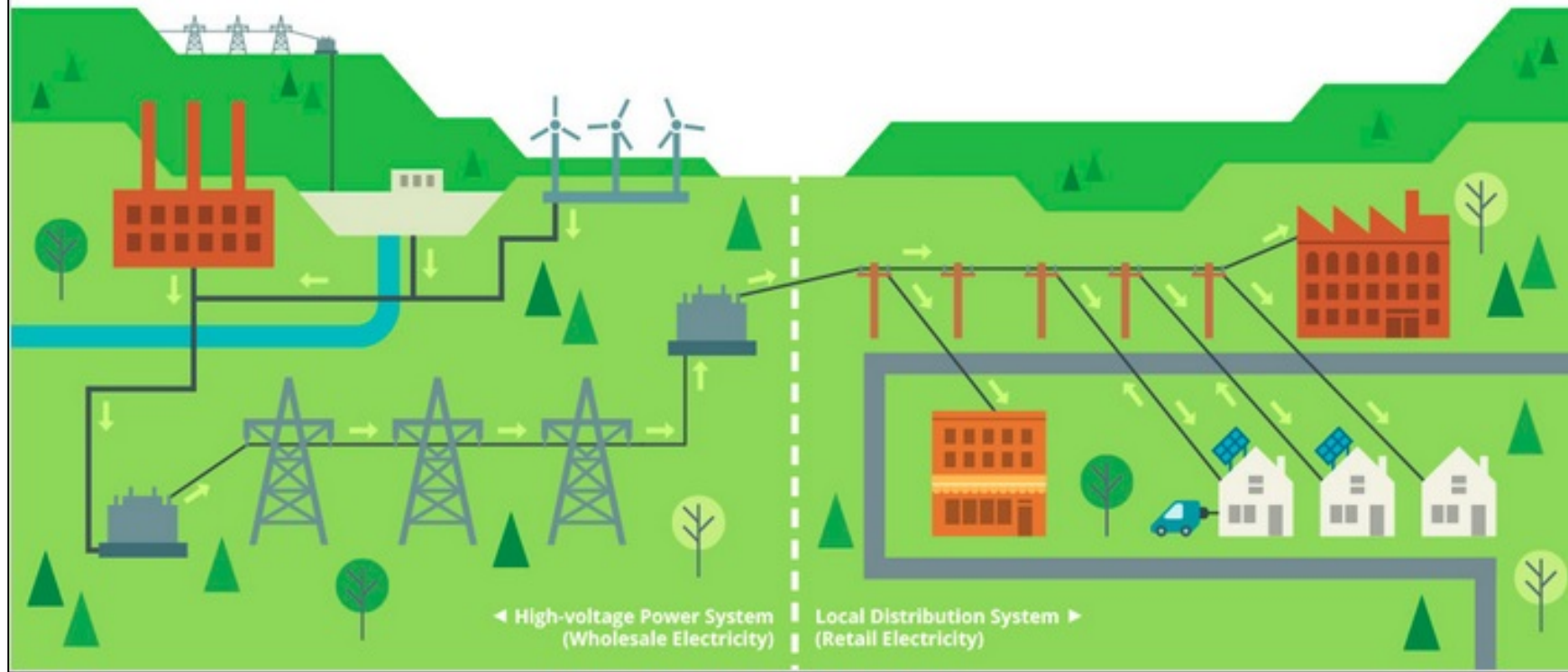


Introduction to the Power System

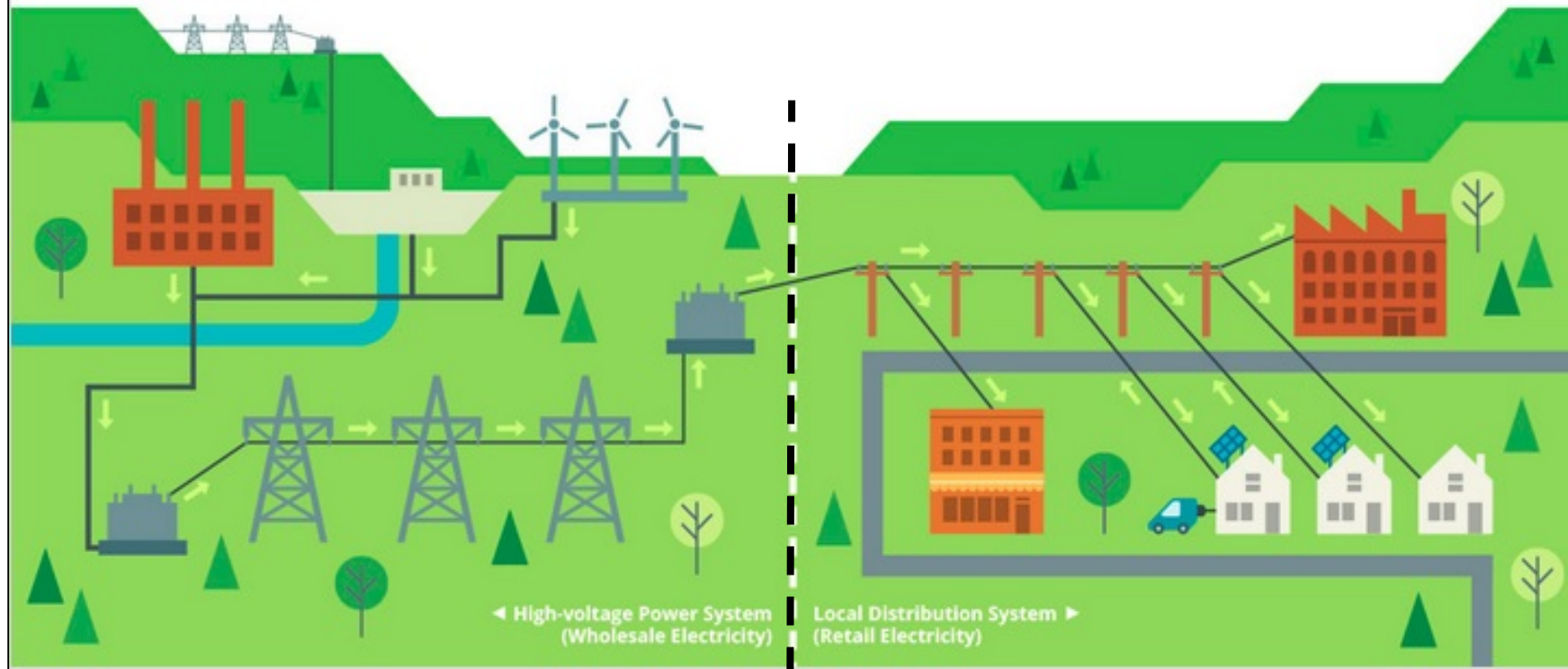
Megan M. Herzog, Special Assistant Attorney General
Energy & Environment Bureau
Massachusetts Office of the Attorney General

Virtual Public “Teach-In” on Energy Markets | December 9, 2020

How electricity is produced, transported, and delivered to consumers

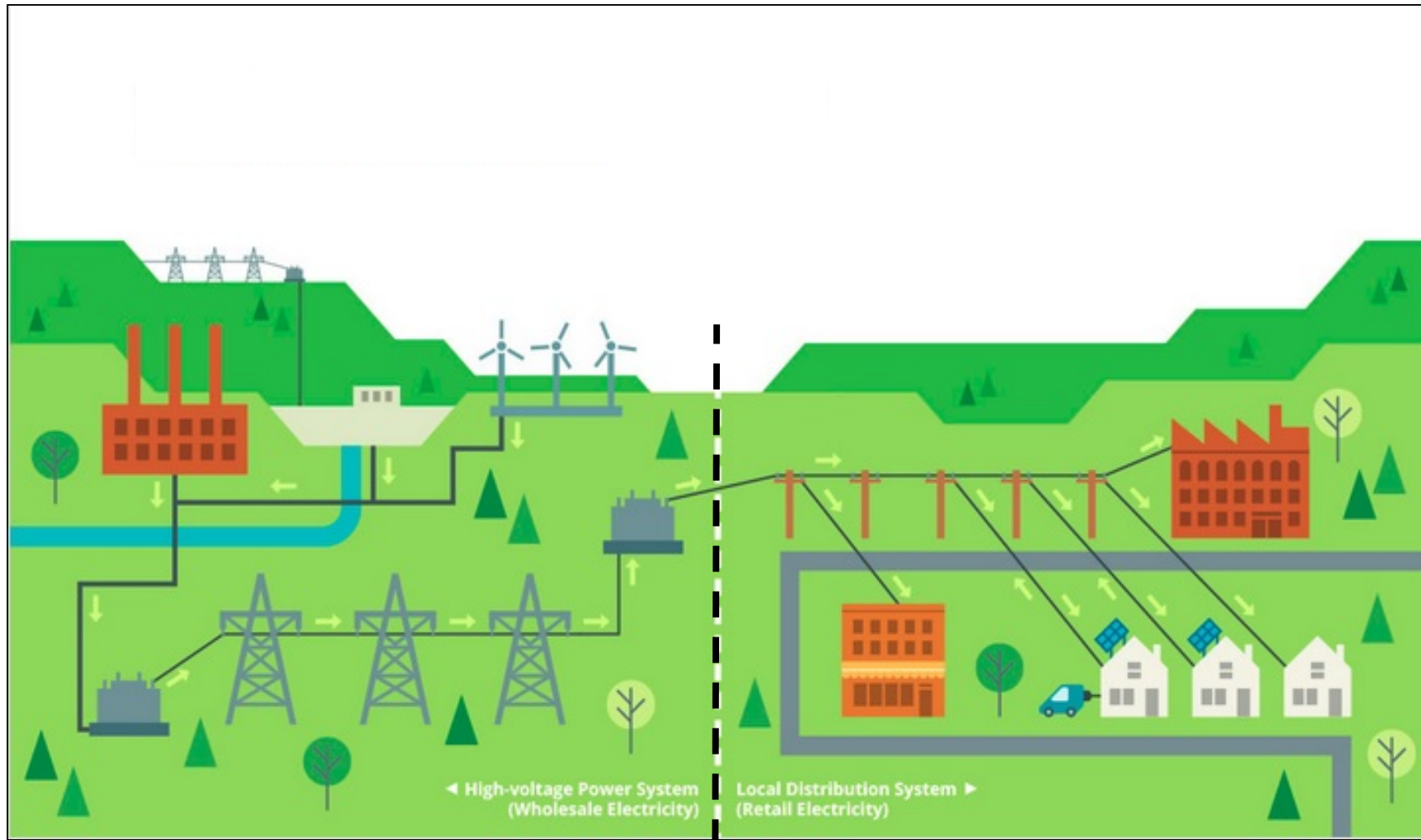


How electricity is produced, transported,
and delivered to consumers



**High-Voltage Power
(Wholesale)**

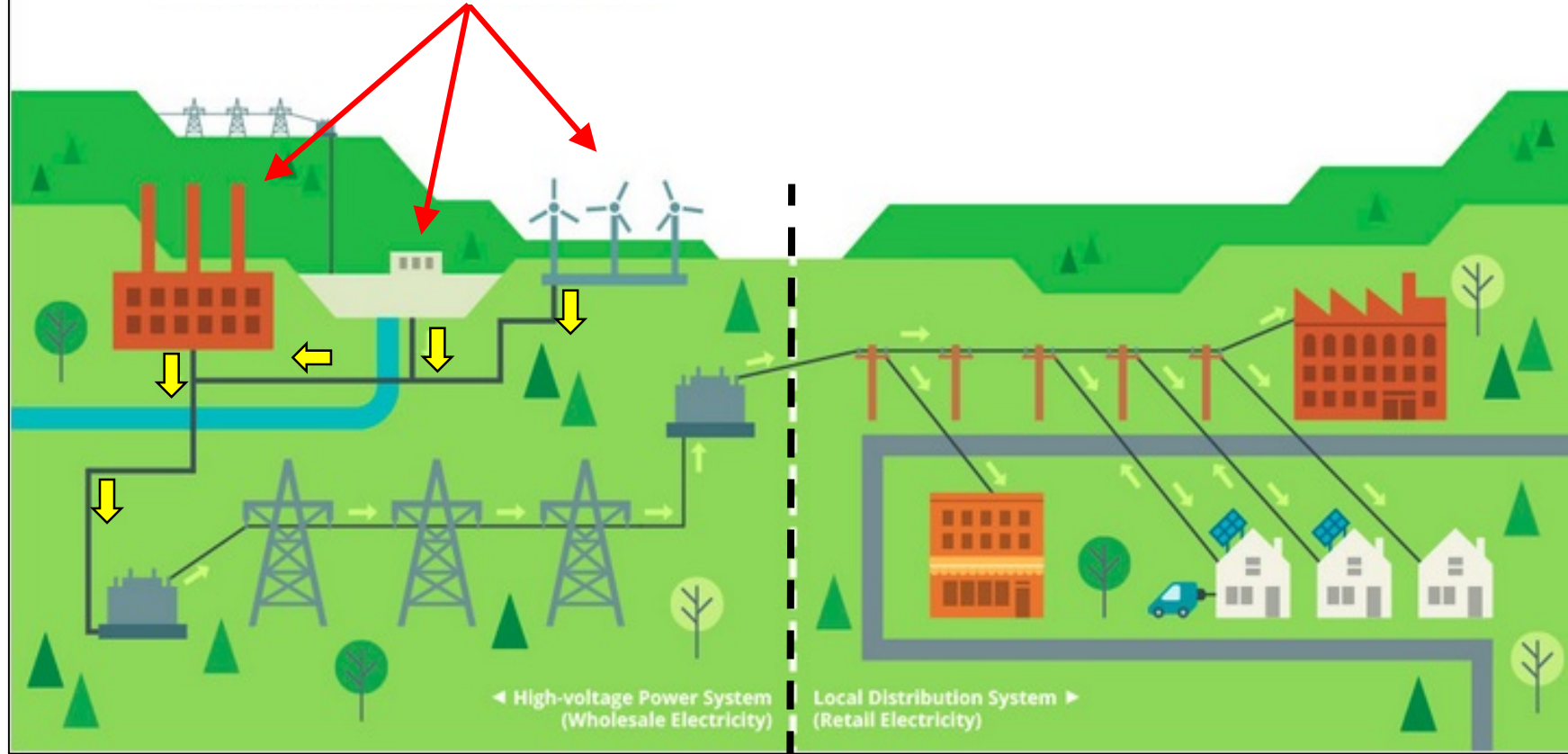
**Local Distribution
(Retail)**



**High-Voltage Power
(Wholesale)**

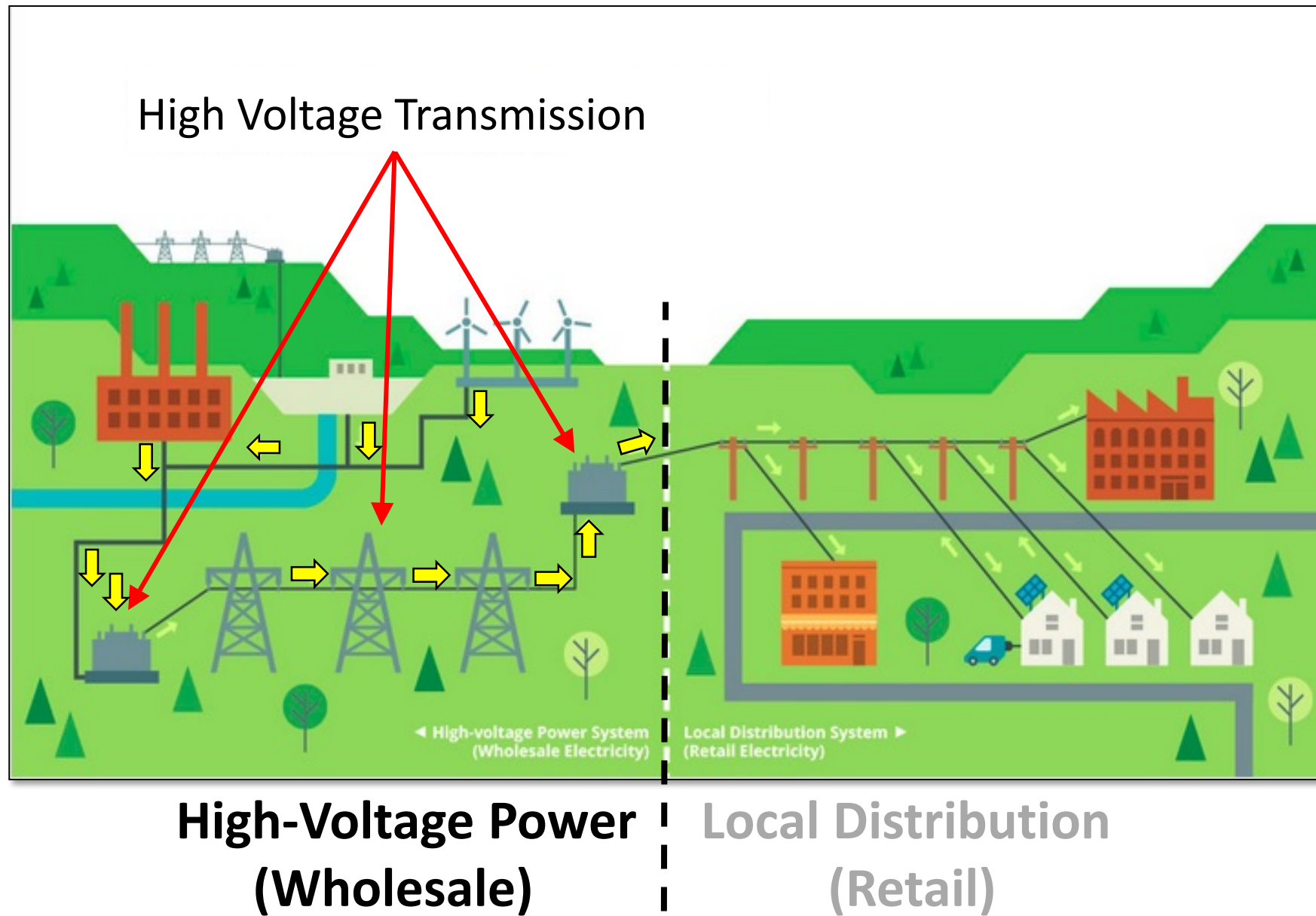
**Local Distribution
(Retail)**

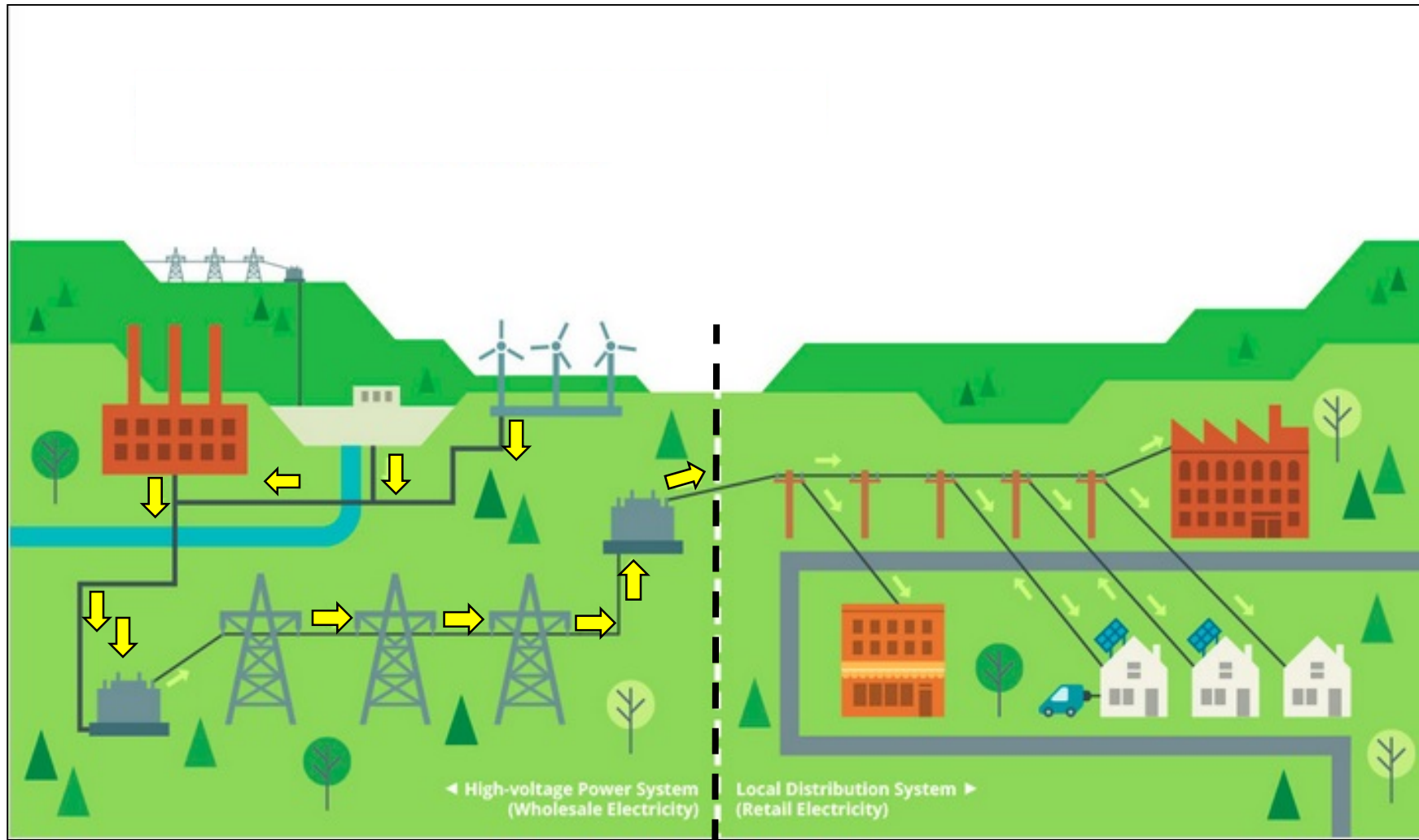
Central or “Utility-Scale” Generation



**High-Voltage Power
(Wholesale)**

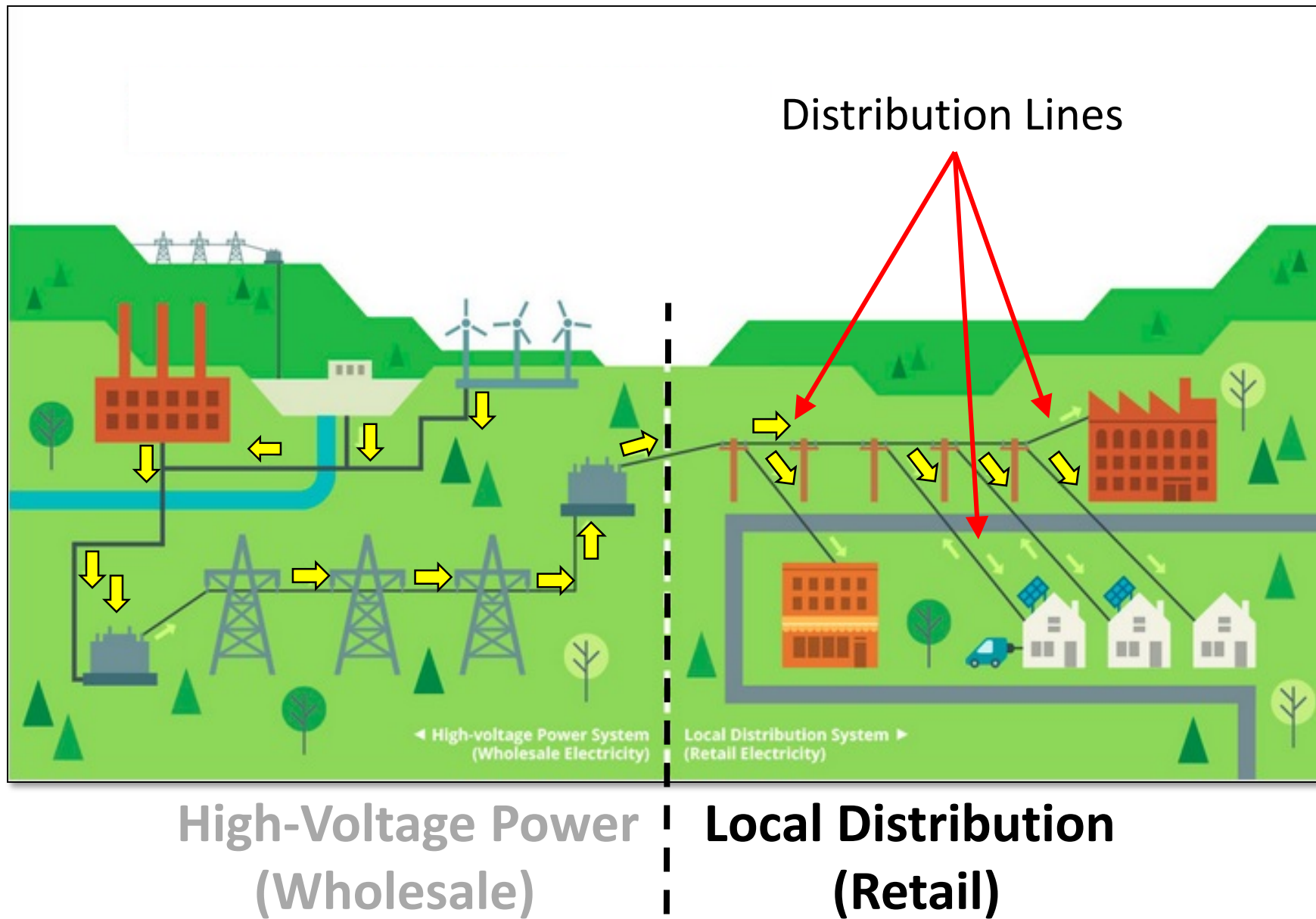
**Local Distribution
(Retail)**

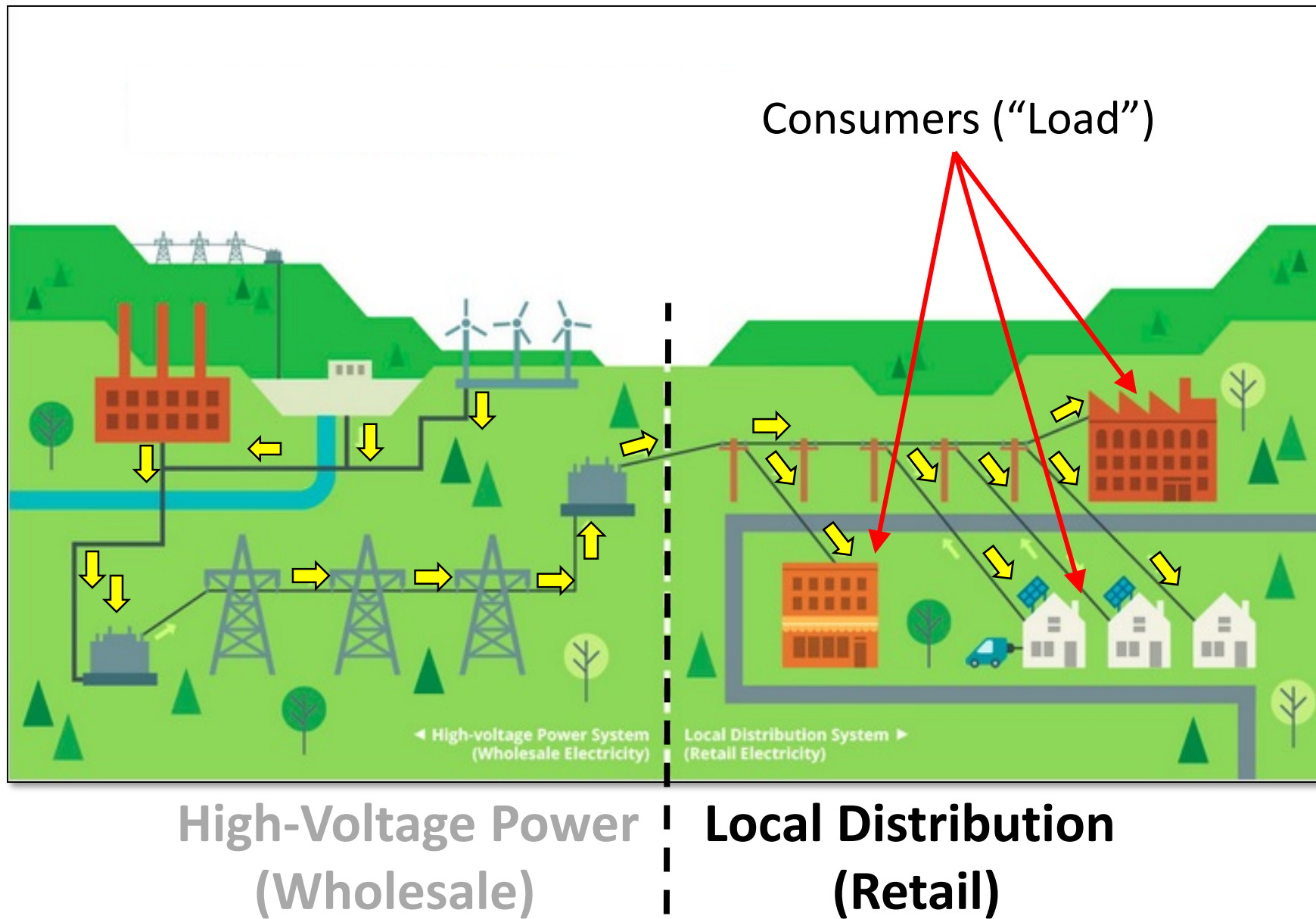


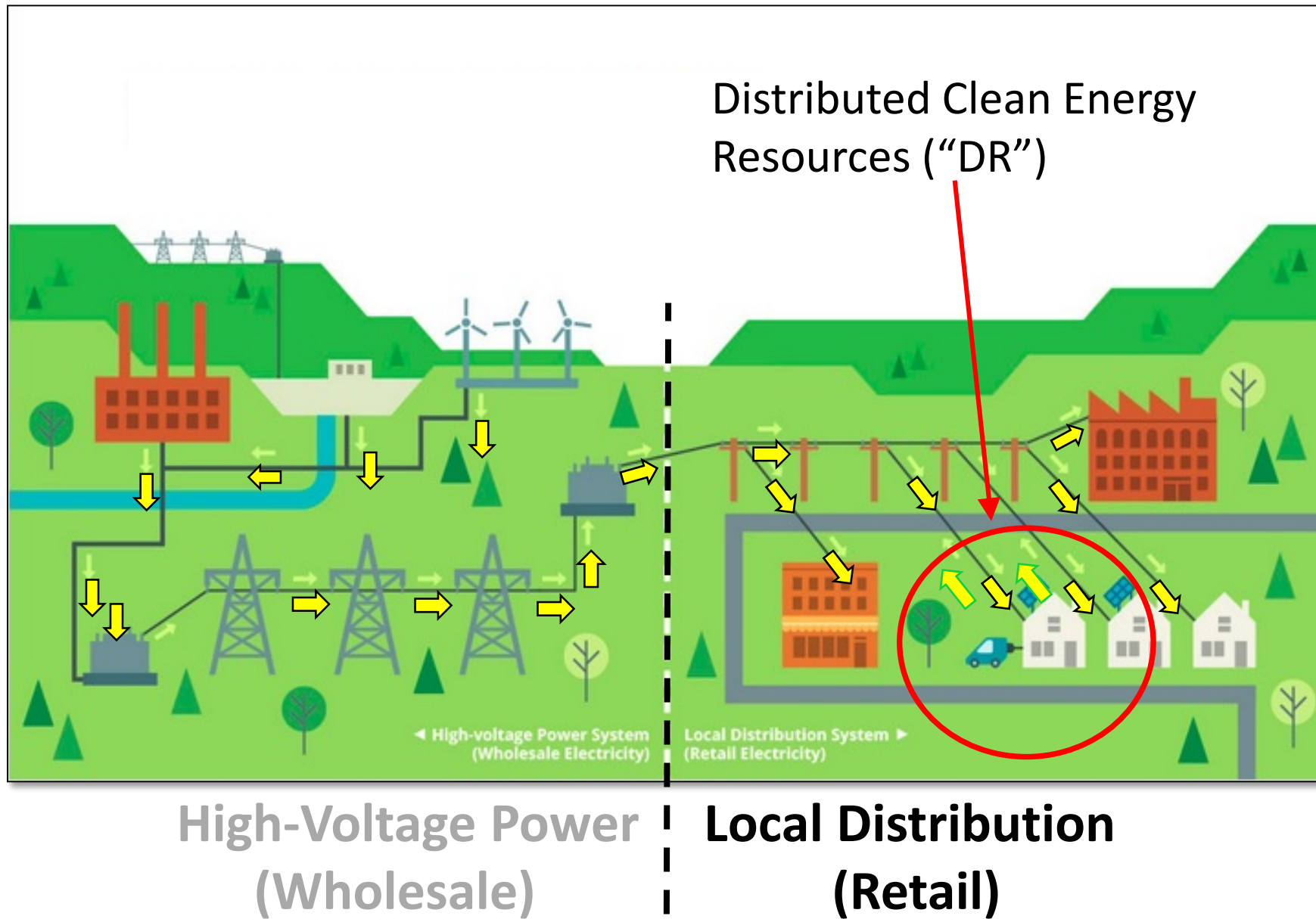


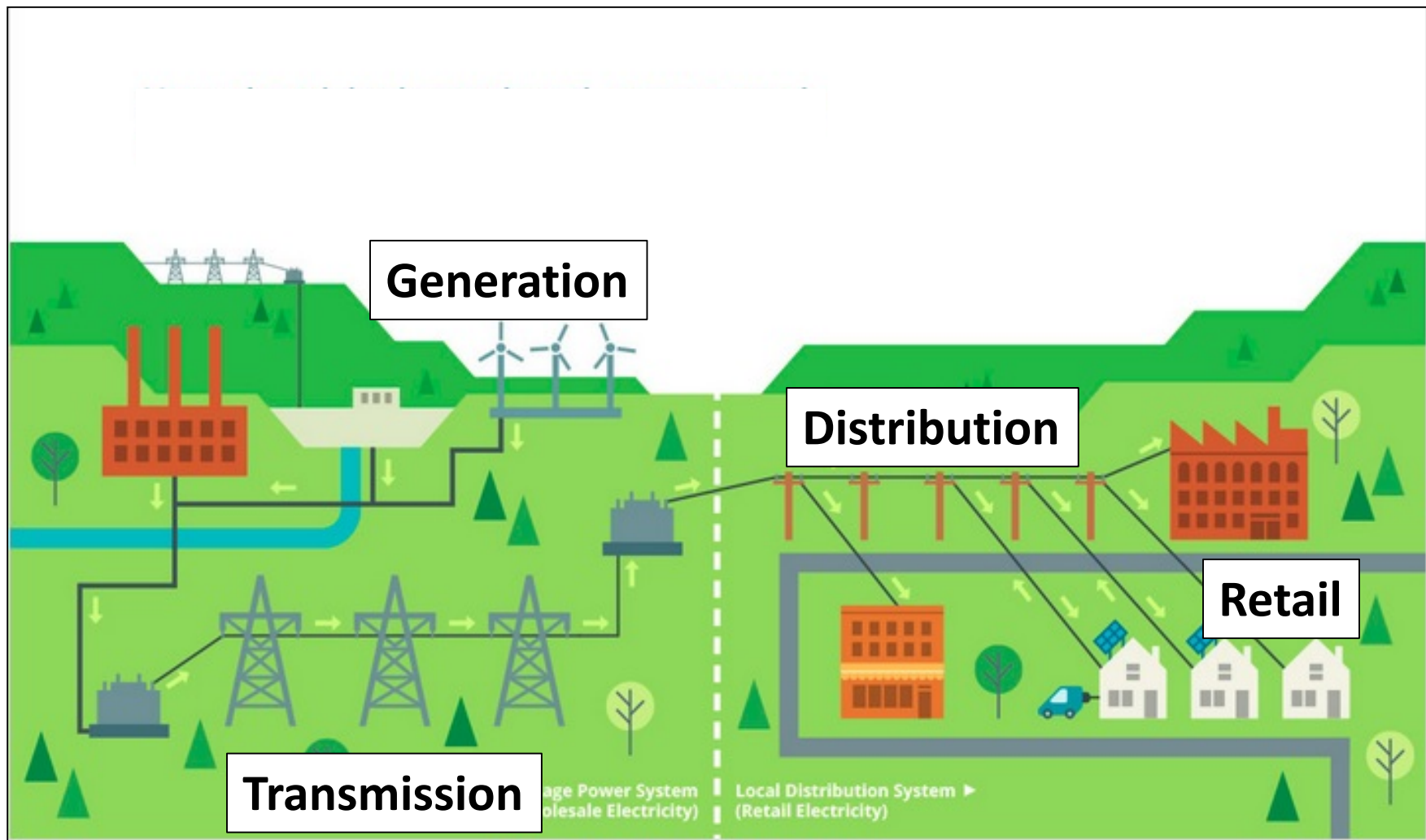
**High-Voltage Power
(Wholesale)**

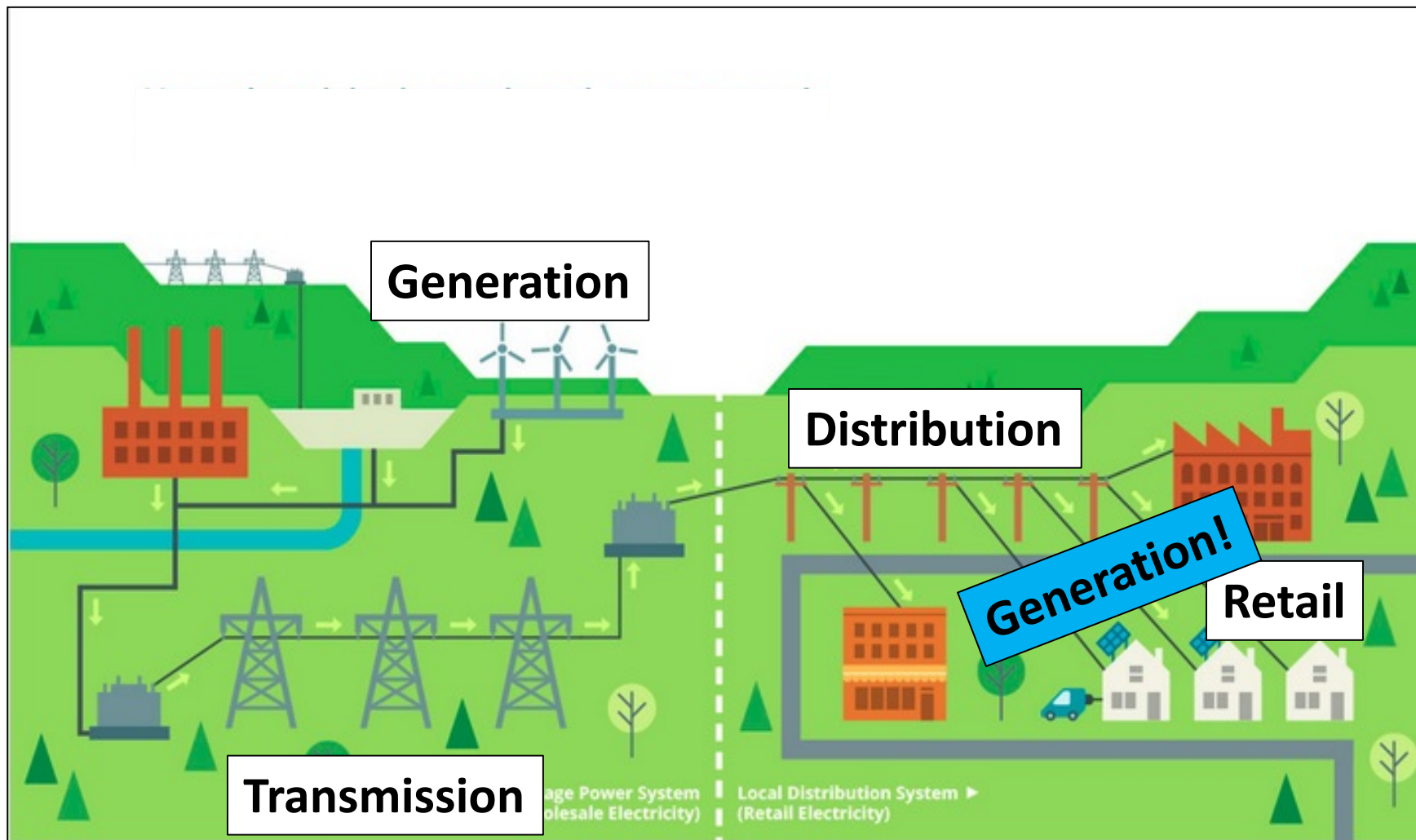
**Local Distribution
(Retail)**











GENERATION

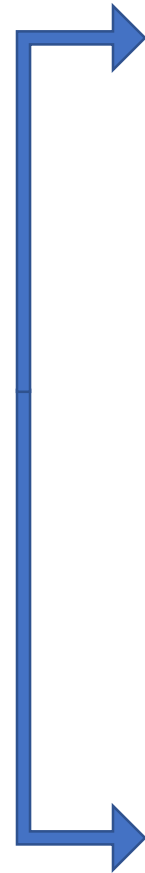
TRANSMISSION

DISTRIBUTION

RETAIL

“Traditional”
Cost-of-Service

**Vertically-
Integrated
Monopoly
Utility**



GENERATION

TRANSMISSION

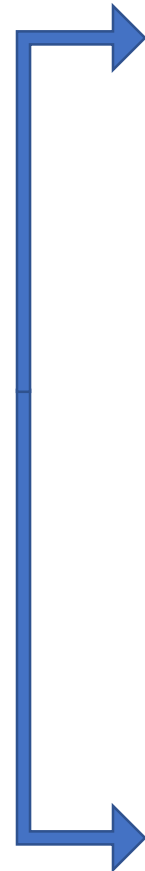
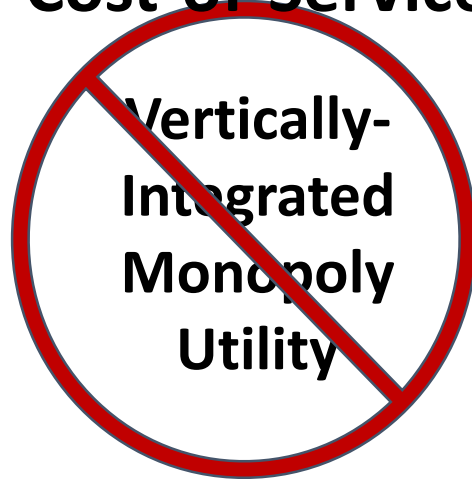
DISTRIBUTION

RETAIL

“Traditional”
Cost-of-Service



“Restructured”
Market-Based



GENERATION

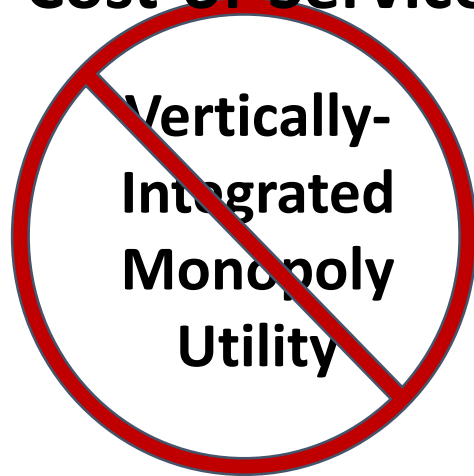
TRANSMISSION



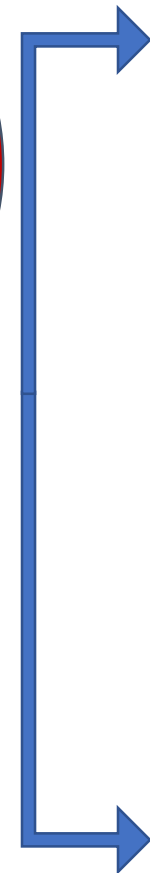
DISTRIBUTION

RETAIL

***“Traditional”
Cost-of-Service***



***“Restructured”
Market-Based***



GENERATION



Indepen. Power Producers

TRANSMISSION



Transmission Owners



DISTRIBUTION



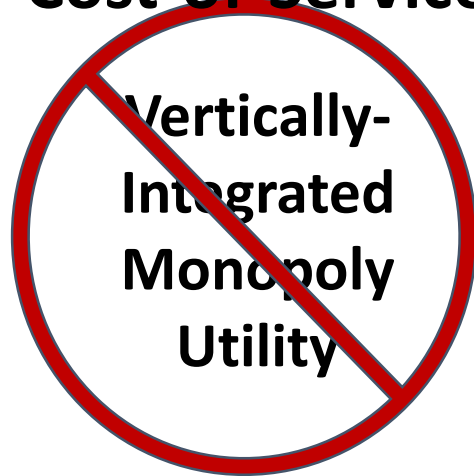
**Distribution Companies
 (“Utilities”)**

RETAIL

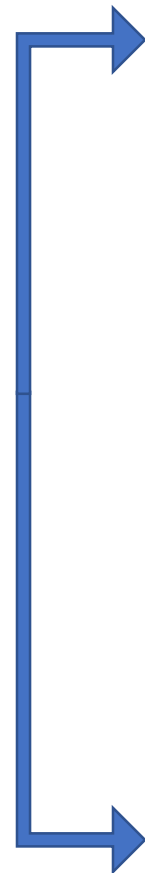


**Distribution Companies,
Competitive Suppliers,
Municipal Aggregators**

“Traditional”
Cost-of-Service



“Restructured”
Market-Based



GENERATION



Indepen. Power Producers

TRANSMISSION



Transmission Owners



DISTRIBUTION



Distribution Companies
("Utilities")

RETAIL



Distribution Companies,
Competitive Suppliers,
Municipal Aggregators

***“Traditional”
Cost-of-Service***

***“Restructured”
Market-Based***



Vertically-
Integrated

GENERATION

Producers

Producers

**Distribution companies cannot own power
plants or renewables without legislative OK**

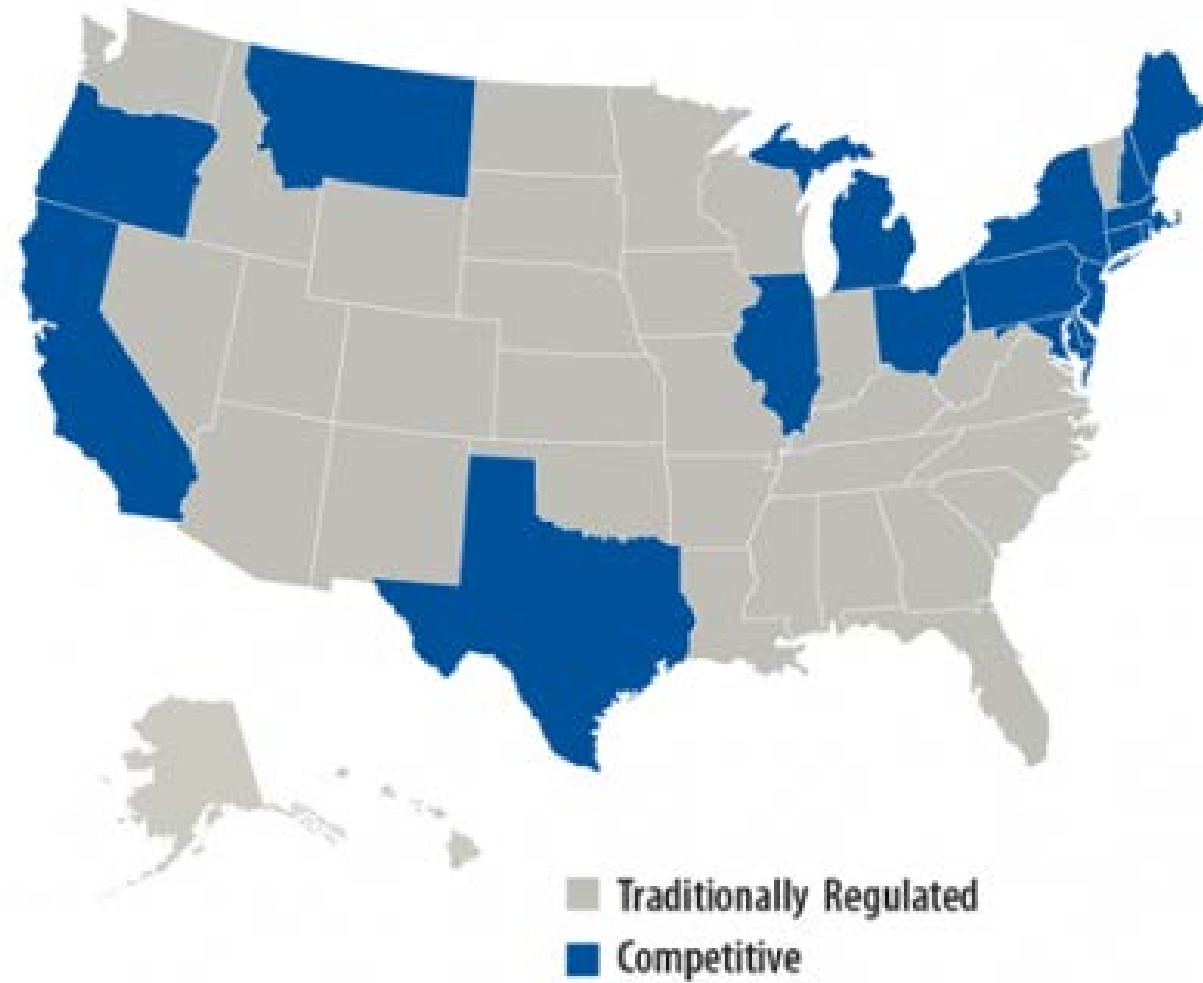
DISTRIBUTION

Distribution Companies
("Utilities")

RETAIL

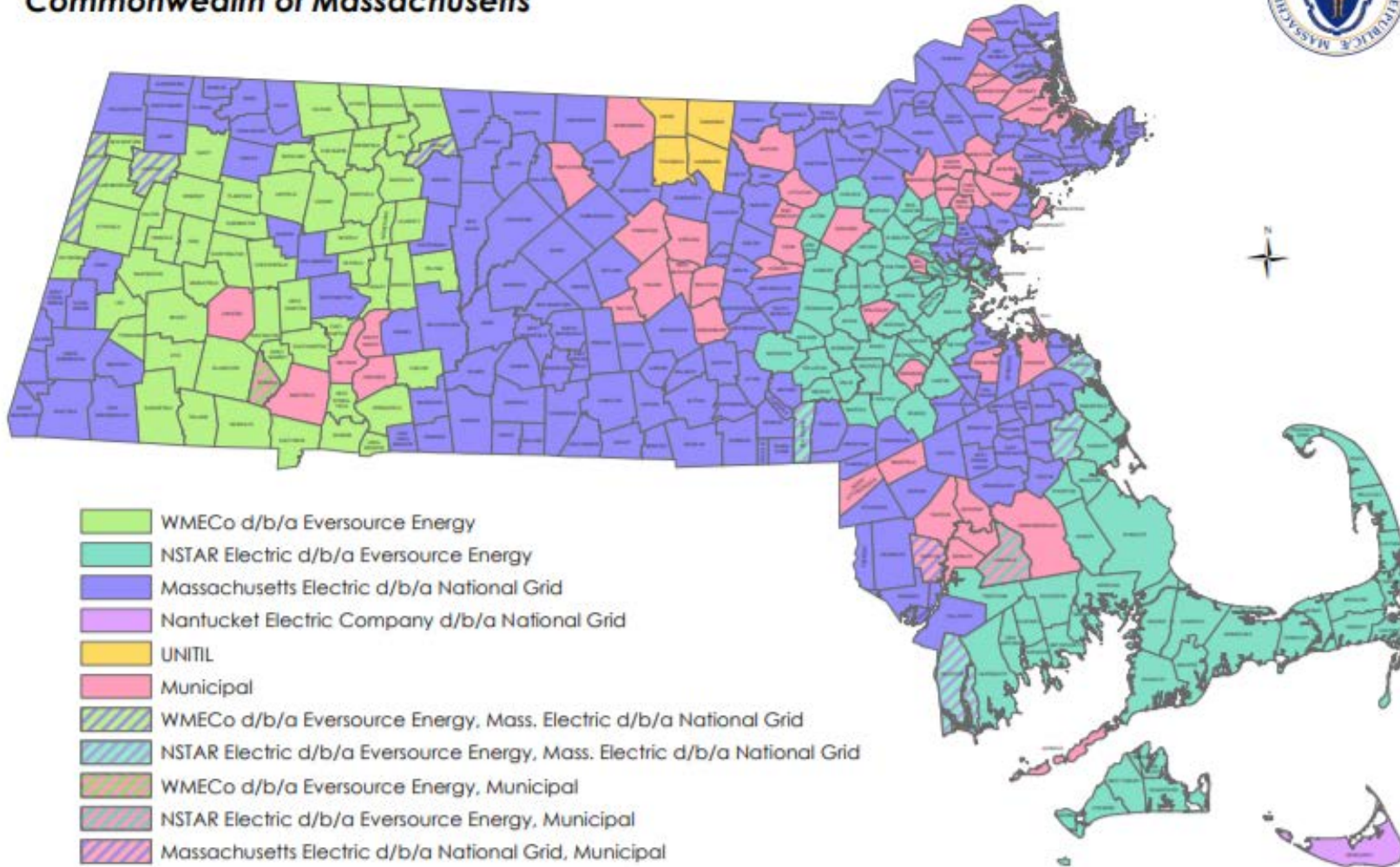
Distribution Companies,
Competitive Suppliers,
Municipal Aggregators

Retail Electric Power Markets



Electricity Providers by Municipality

Commonwealth of Massachusetts



Source: Massachusetts Department of Public Utilities, September 2015

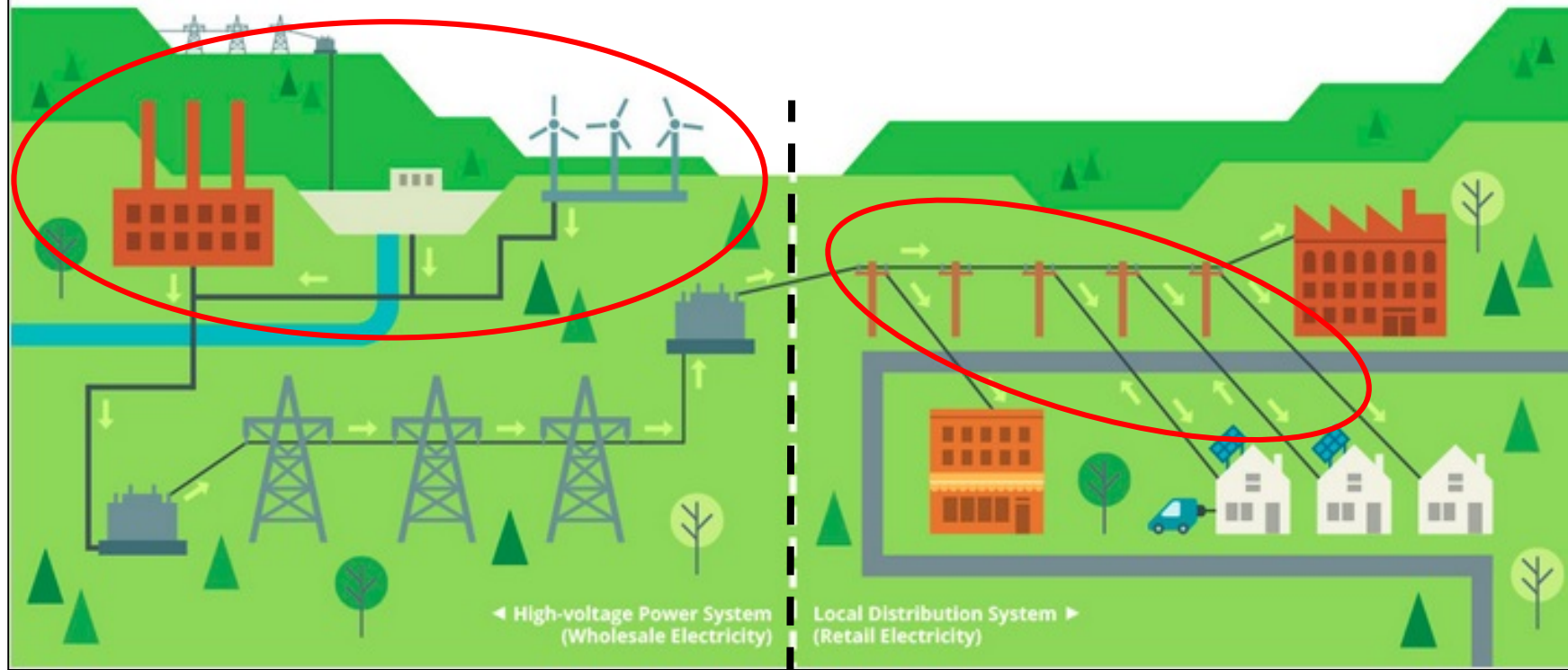


MassIT



Map by MassGIS, 5/31/2016

Municipal Light Plants either buy all or buy + generate some electricity; all deliver and sell to local customers.



**High-Voltage Power
(Wholesale)**

**Local Distribution
(Retail)**

GENERATION



**Independent Power
Producers**

TRANSMISSION



Transmission Owners

DISTRIBUTION

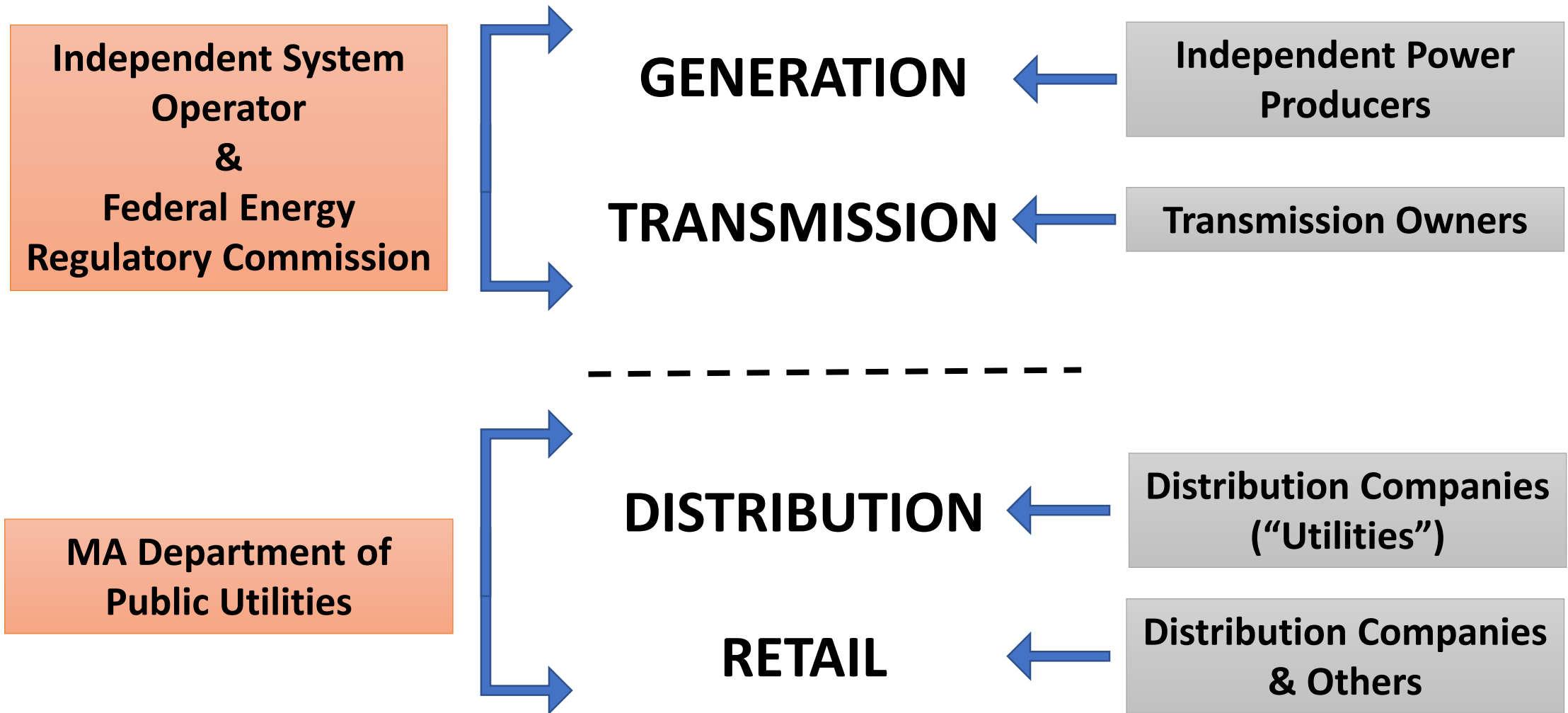


**Distribution Companies
("Utilities")**

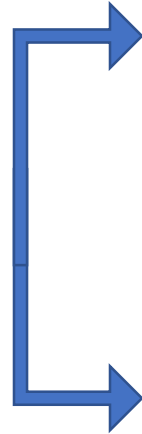
RETAIL



**Distribution Companies
& Others**



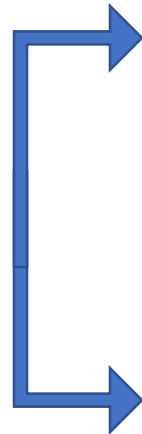
**Independent System
Operator
&
Federal Energy
Regulatory Commission**



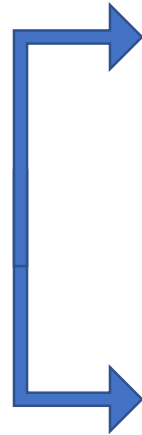
ISO New England



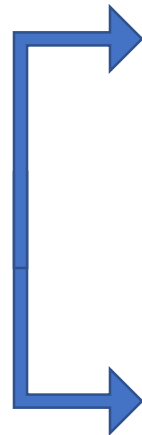
**MA Department of
Public Utilities**



**Independent System
Operator
&
Federal Energy
Regulatory Commission**



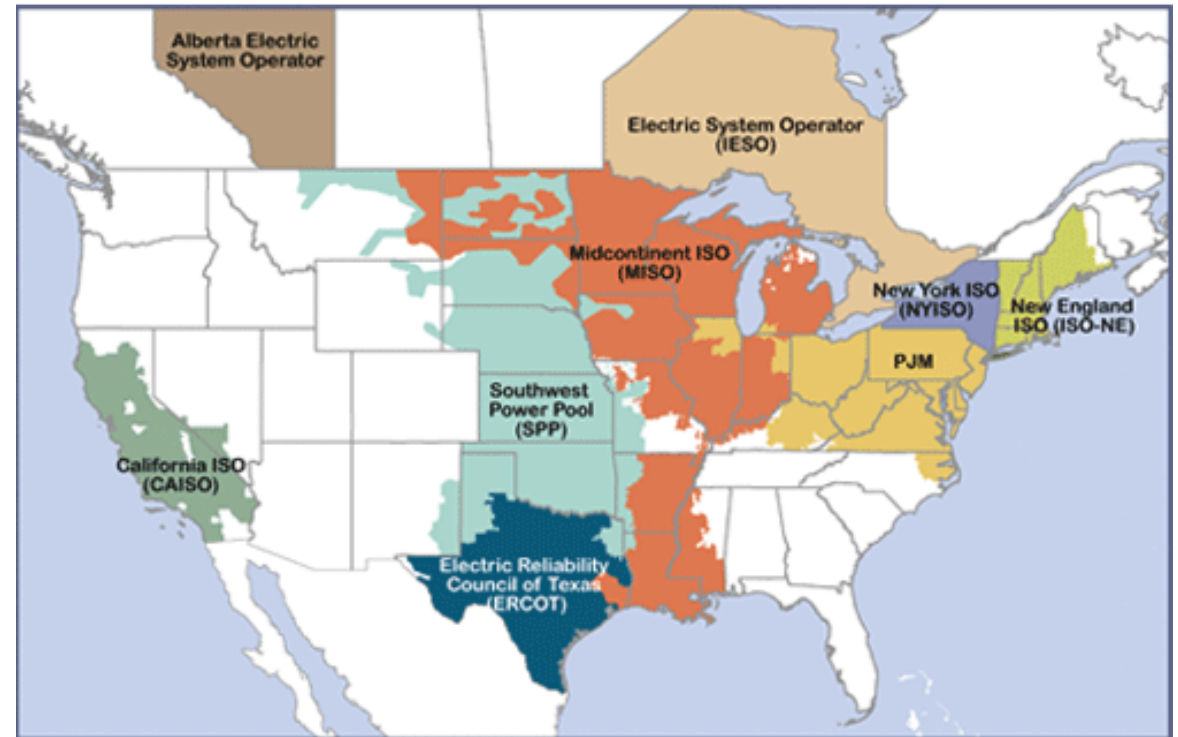
**MA Department of
Public Utilities**





Why was ISO New England created?

- Facilitate competition among wholesale suppliers
- Provide non-discriminatory access to transmission by scheduling and monitoring its use
- Perform grid planning and operations to ensure reliability
- Manage the interconnection of new resources
- Oversee competitive energy markets to guard against market power and manipulation
- Provide greater transparency of transactions on the system

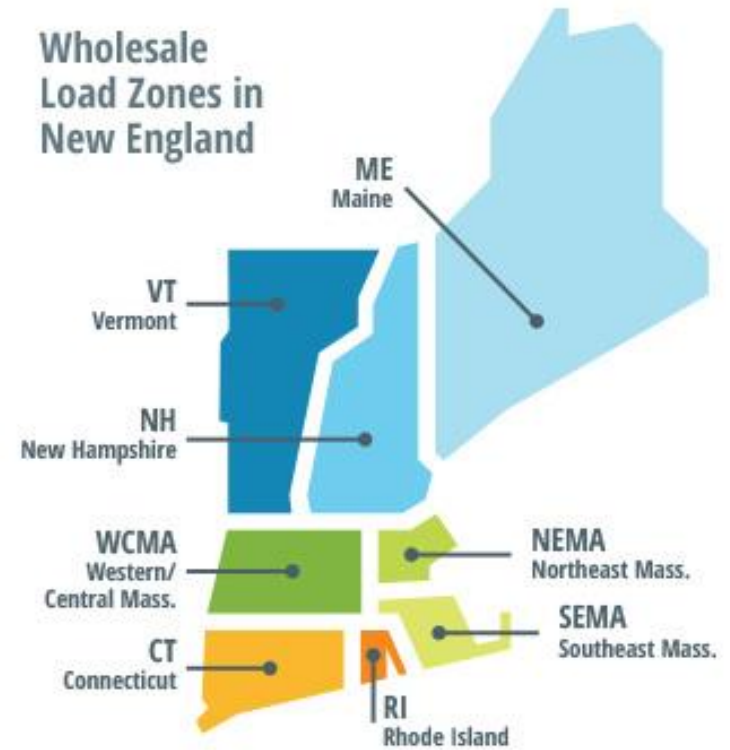


Source: ferc.gov



ISO New England

- Non-profit corp. that manages, monitors, & plans system operations
- Led by President/CEO
- Overseen by 10-member Board of Directors, elected with endorsement from committee of market participants & state regulators
- 2020 budget: \$203 million = ~\$1/month per average customer
- Overseen by Federal Energy Regulatory Commission (FERC)

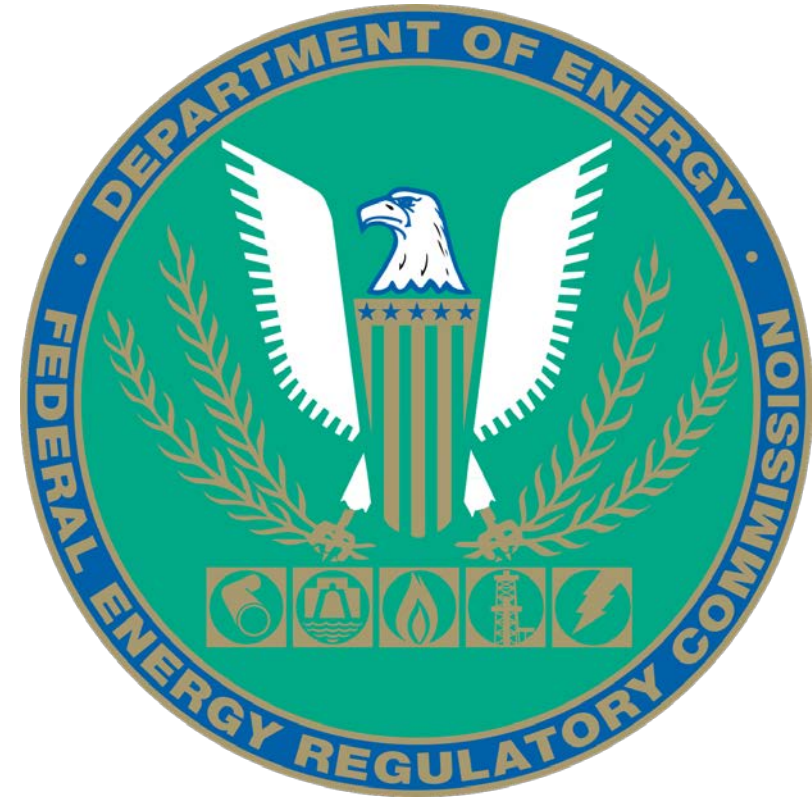


Source: ISO New England



Federal Energy Regulatory Commission (FERC)

- Independent, bipartisan agency
- Regulates interstate transmission & wholesale sale of electricity, gas
- 5 Commissioners nominated by President; no more than 3 from same party
- Only courts review decisions—not President, Congress





Important State Roles



State Legislature:

Can direct utilities, DPU through legislation



Governor:

Tells state agencies how to use their authority, can influence ISO-New England



Attorney General's Office:

Advocates on behalf of MA electricity users before DPU, ISO-New England, & FERC



Thank You