

Innovative Public Private Partnerships

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Why Partnerships?

Parties and project entities vary by:

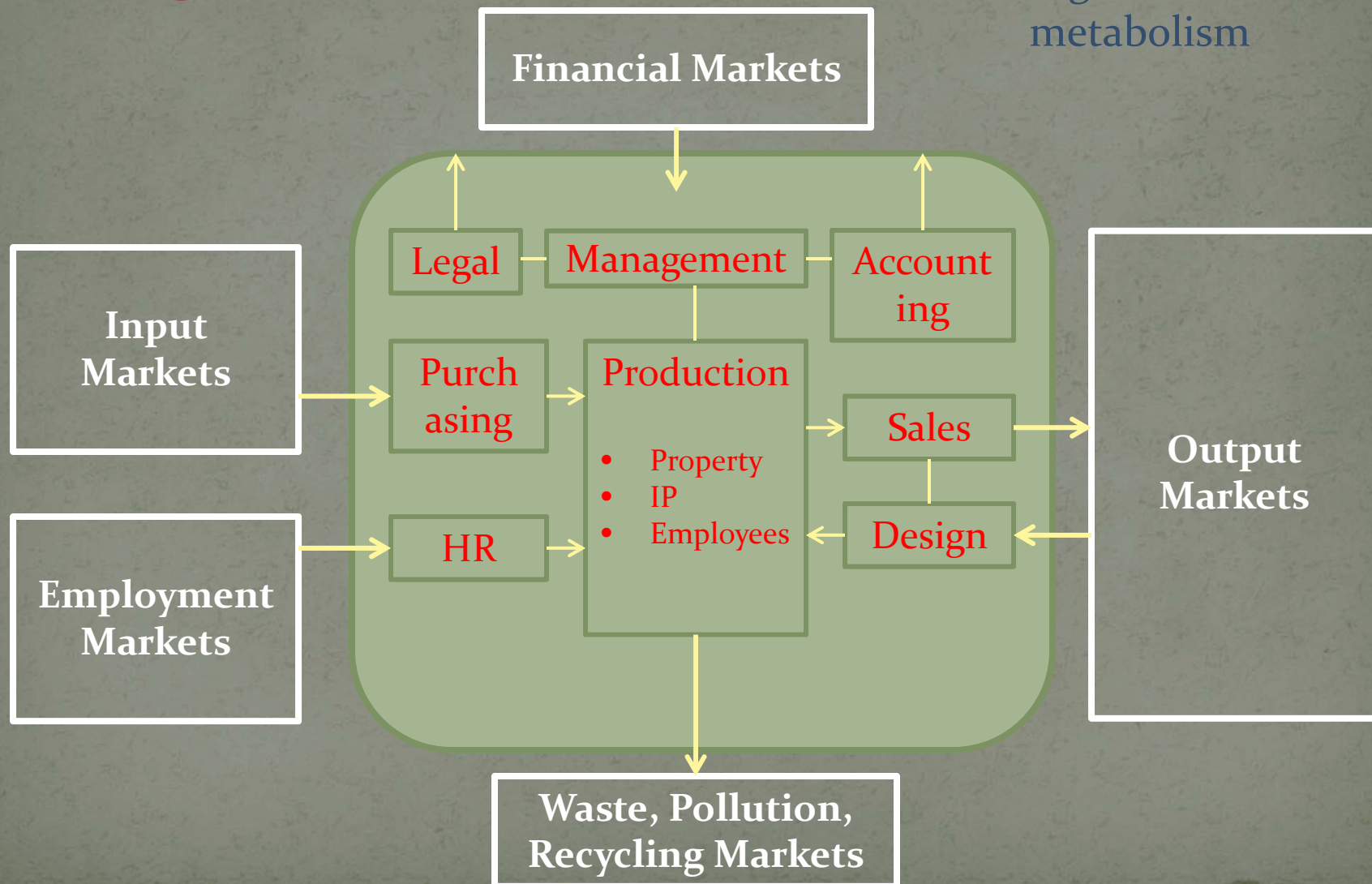
- Capabilities
 - Legal purposes
 - Core competency
- Constraints
 - Legal regulation
- Credit
 - Legal capacity
 - Sustainability
 - Collateral

Partnerships

- Public/Private
 - Profit/Non-profit
 - Utility/Private
- are an exercise in financial and legal engineering

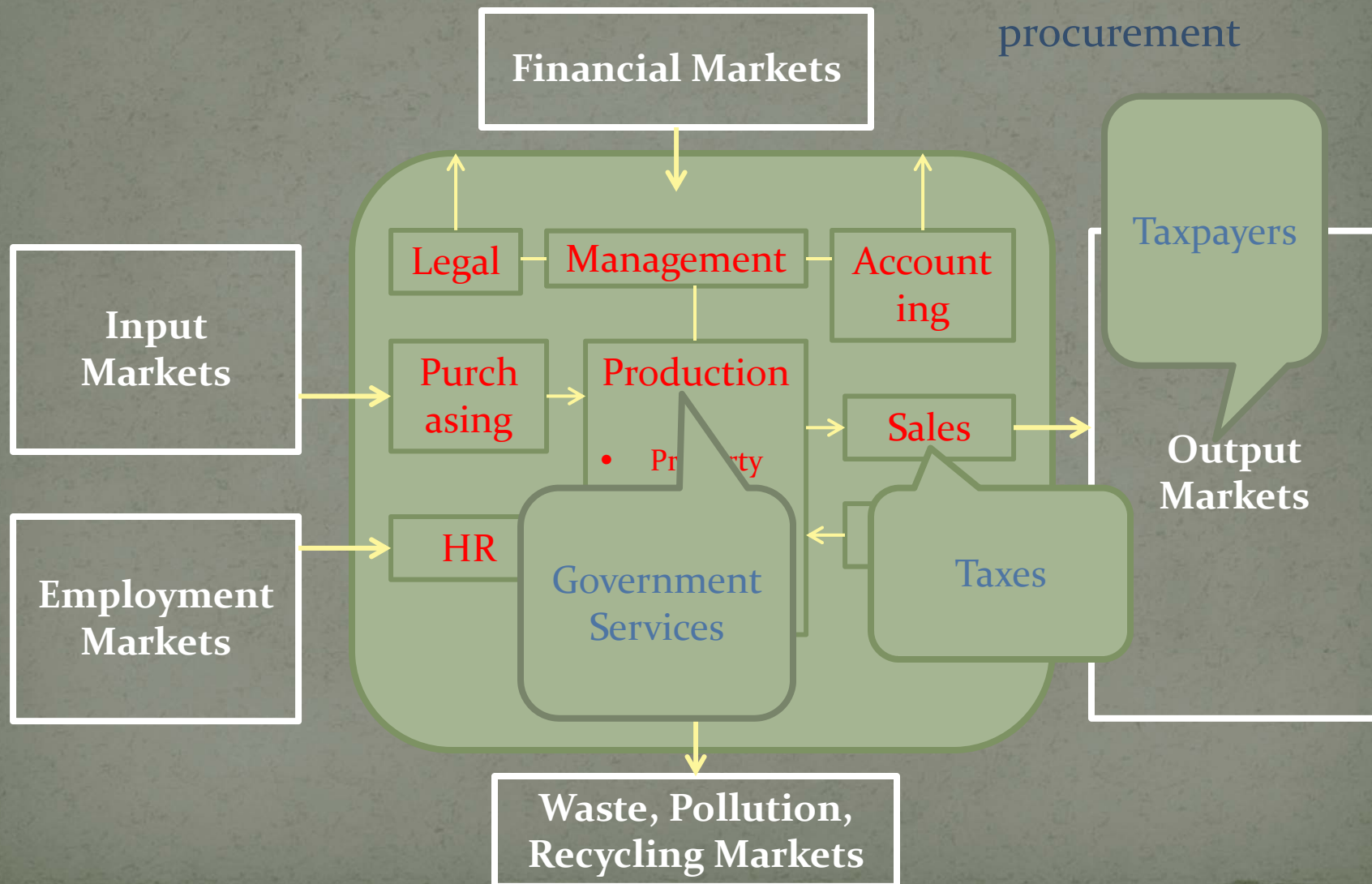
Organization

Flows represent
organizational
metabolism

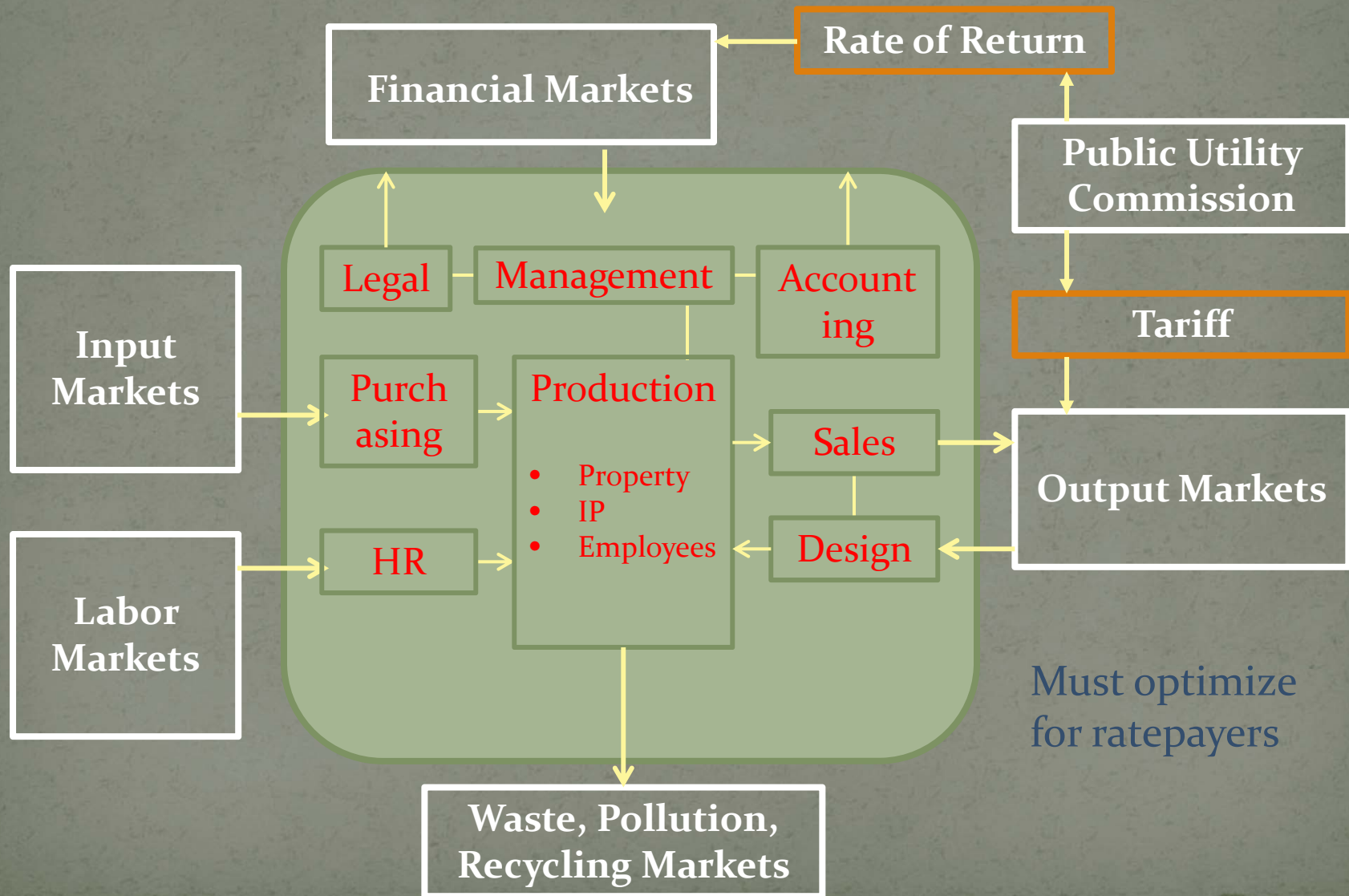


Government

Limitations on
debt and
procurement

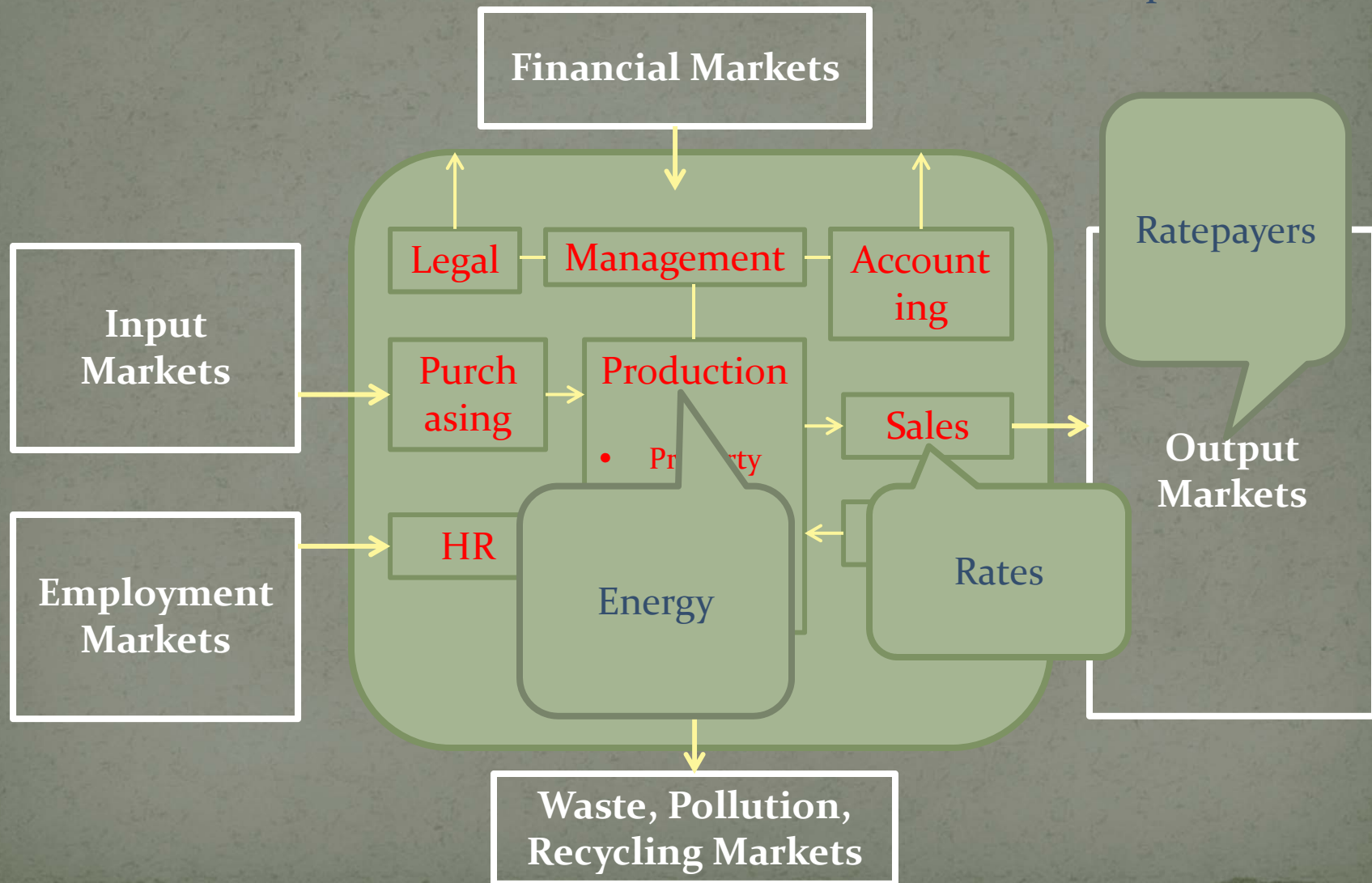


Utility

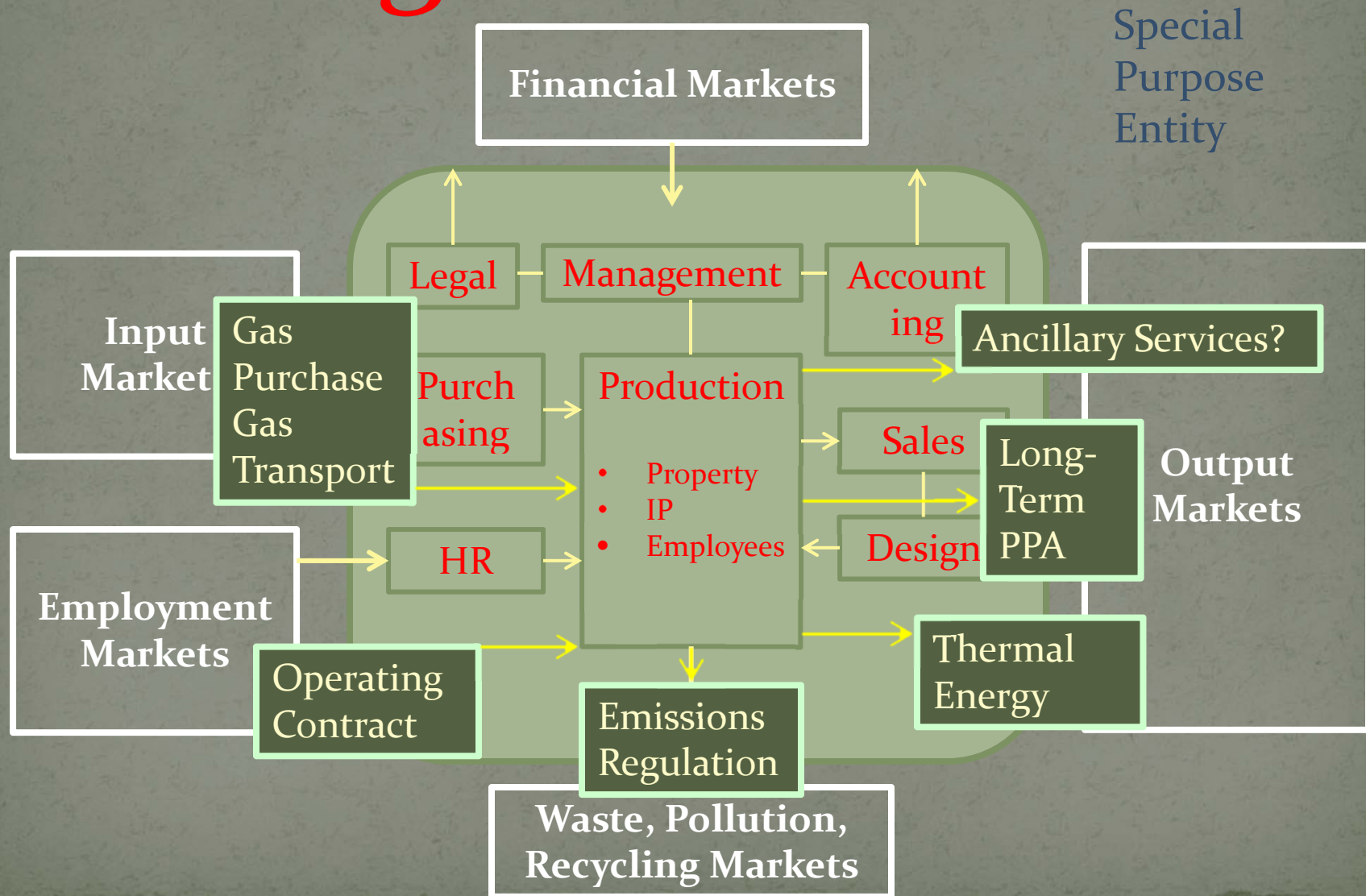


Municipal Utility

Organization of
limited powers



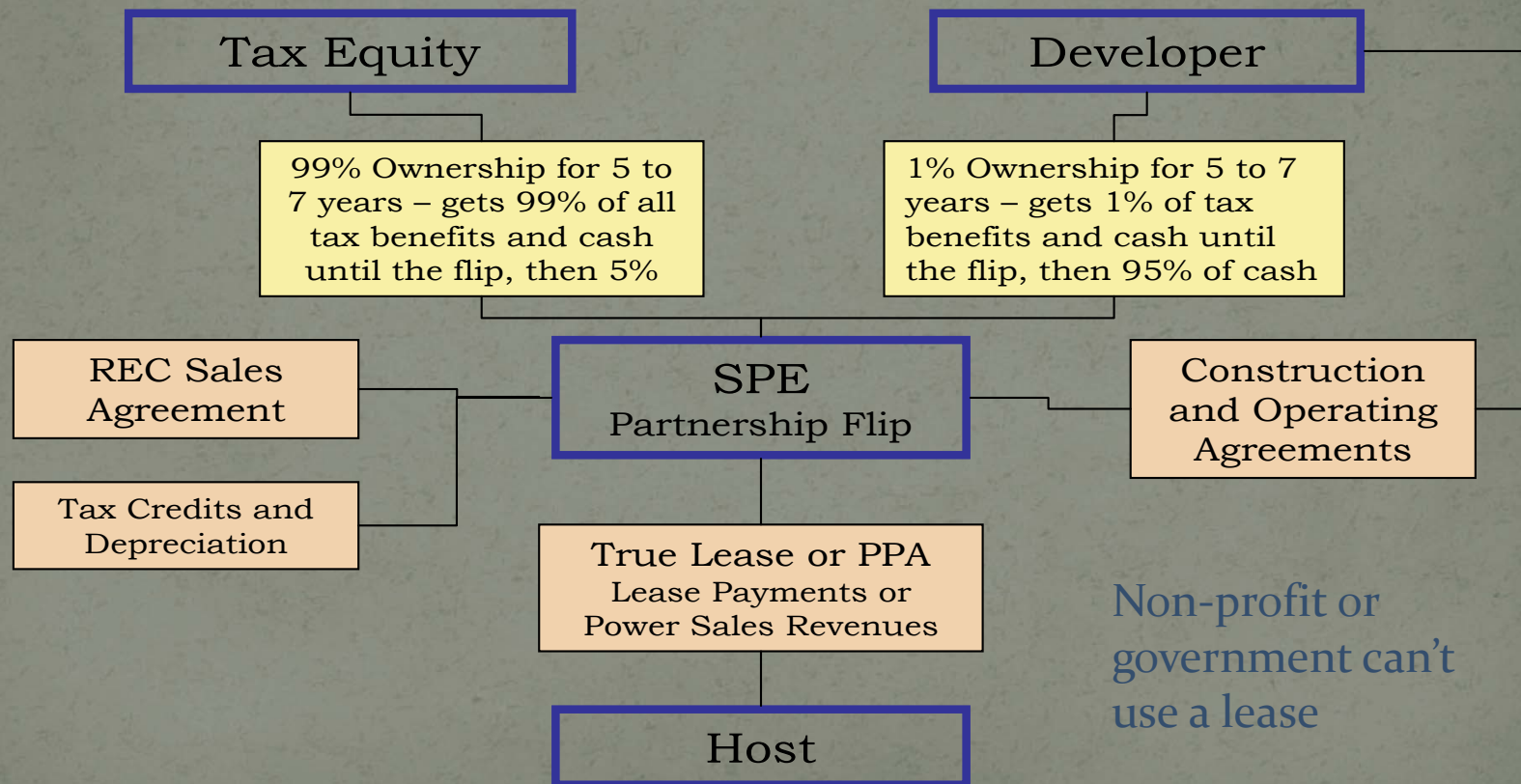
Gas Cogeneration



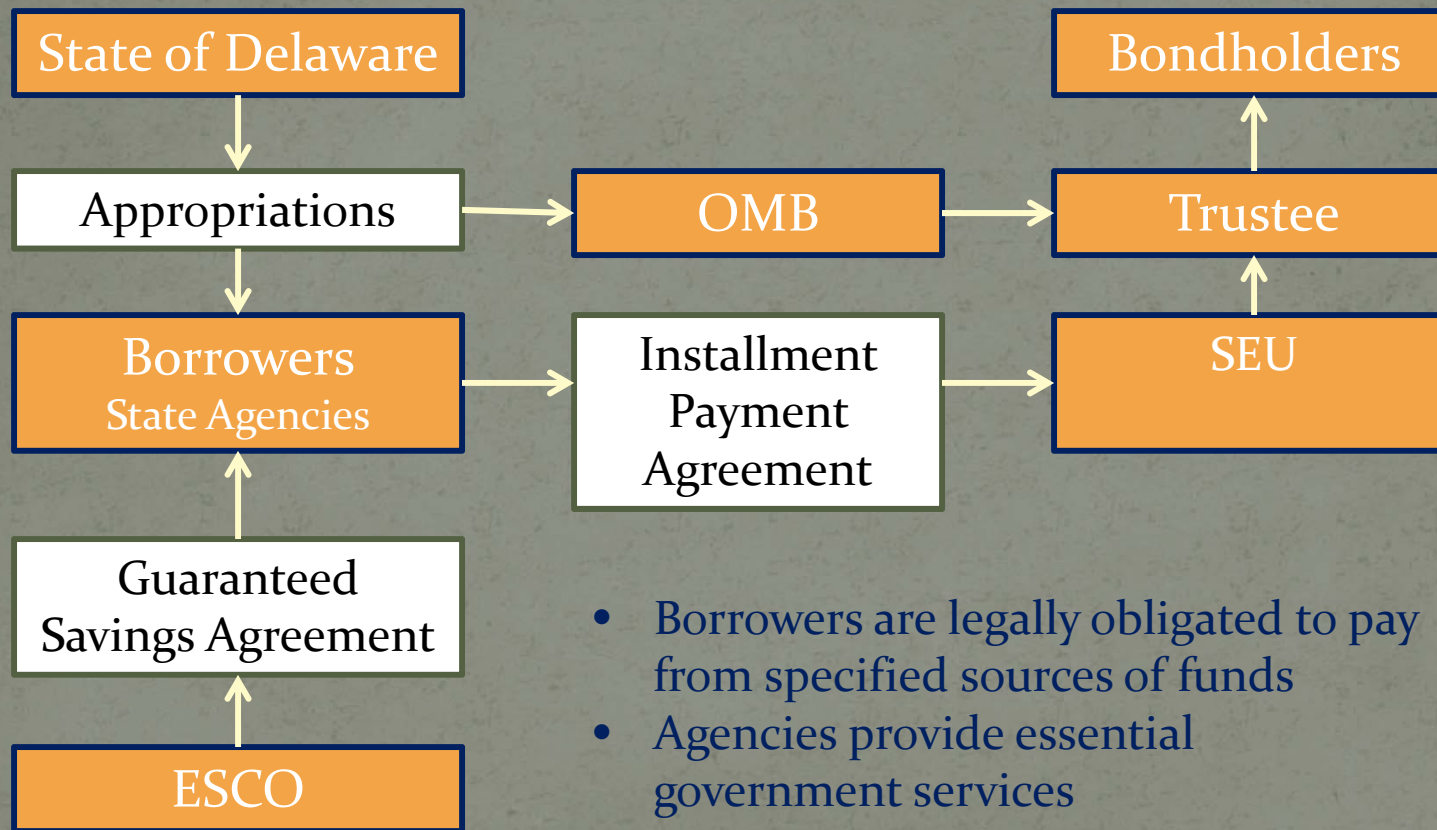
Other Structural Considerations

- Aggregation
 - Multiple small projects, standardization
 - Pooled procurement
 - Pooled financing
- Risk allocation and ownership can be separate
 - Who is allowed to optimize?
 - Is a partner acting as an agent or a principal?
 - Financing usually follows ownership of the assets financed.
- Performance measurement and guarantees
 - Energy measurement and verification – the costs of information are coming down
 - Performance covenants and guarantees

Typical Solar Financing Structure



Pooled Energy Efficiency Bonds





The Parks at Walter Reed

- The Parks at Walter Reed is a 66-acre land development of the historic Walter Reed Army Medical Center site that when fully developed will contain 3.1 million square feet of retail, for-rent and for-sale multifamily, townhomes, office, healthcare, a school and a hotel.
- The Parks at Walter Reed will include roughly 250,000 square feet of retail, a Hyatt conference center and hotel, and an "Innovation Core" anchored by medical research departments of George Washington University, bioscience and pharmaceutical companies, and economic development and sustainability programs of MIT.
- More than 2,000 units of high-quality housing will be developed to serve a diverse mix of incomes and households, providing both rental and homeownership options.
- The development will have 20 acres of green space, and will employ energy saving and water conserving tools, alternative forms of transport, and recycled and local construction materials to minimize the environmental impact of development.

The Microgrid

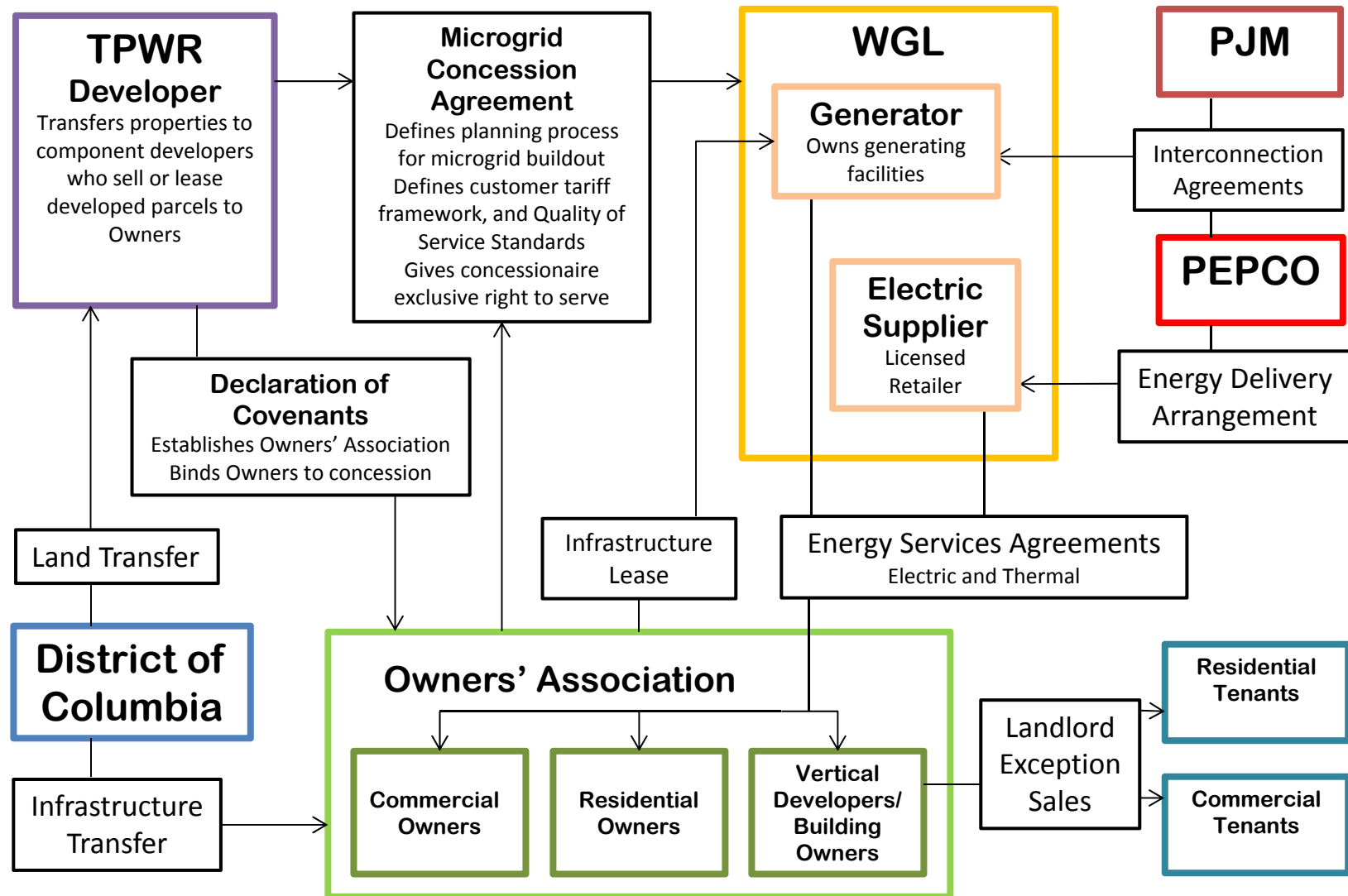
- A principal green element of the development is a microgrid that will use advanced co-generation technology to provide electricity, heating and cooling to the entire Parks at Walter Reed development.
- The microgrid will repurpose the existing network of steam tunnels and wiring on the site.
- The microgrid provides resiliency by cutting itself off from the District of Columbia power grid during emergencies and continuing to provide power to the development.
- TPWR selected WGL Systems, an affiliate of the District of Columbia natural gas utility, to develop the microgrid.

The term “electric company” when used in this subtitle includes every corporation, company, association, joint-stock company or association, partnership, or person and doing business in the District of Columbia, their lessees, trustees, or receivers, appointed by any court whatsoever, physically transmitting or distributing electricity in the District of Columbia to retail electric customers. The term excludes any building owner, lessee, or manager who, respectively, owns, leases, or manages, the internal distribution system serving the building and who supplies electricity and other related electricity services solely to occupants of the building for use by the occupants. The term also excludes a person or entity that does not sell or distribute electricity and that owns or operates equipment used exclusively for the charging of electric vehicles.

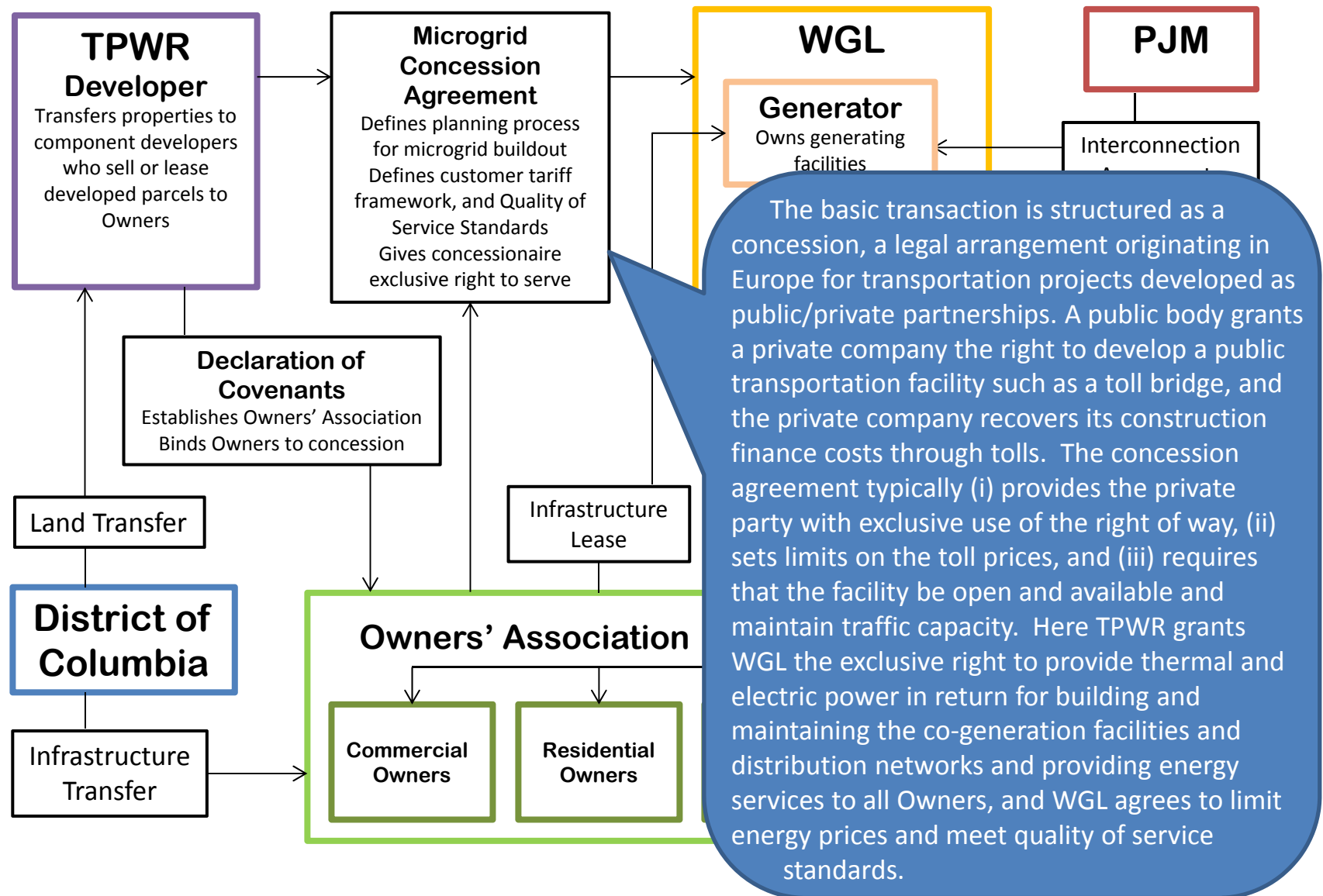
The Legal Structuring Problem

The developer, TPWR, is not the energy customer, the future owners or lessees (Owners) of individual properties are. TPWR needed to put in place a structure that bound the future Owners to obtain services from the microgrid, and needed, in turn, to provide the Owners with protections for future rates and quality of service. The District of Columbia permits sale of electricity by licensed competitive retail electricity providers, but generally limits ownership of the electric distribution system to a single monopoly utility (PEPCO).

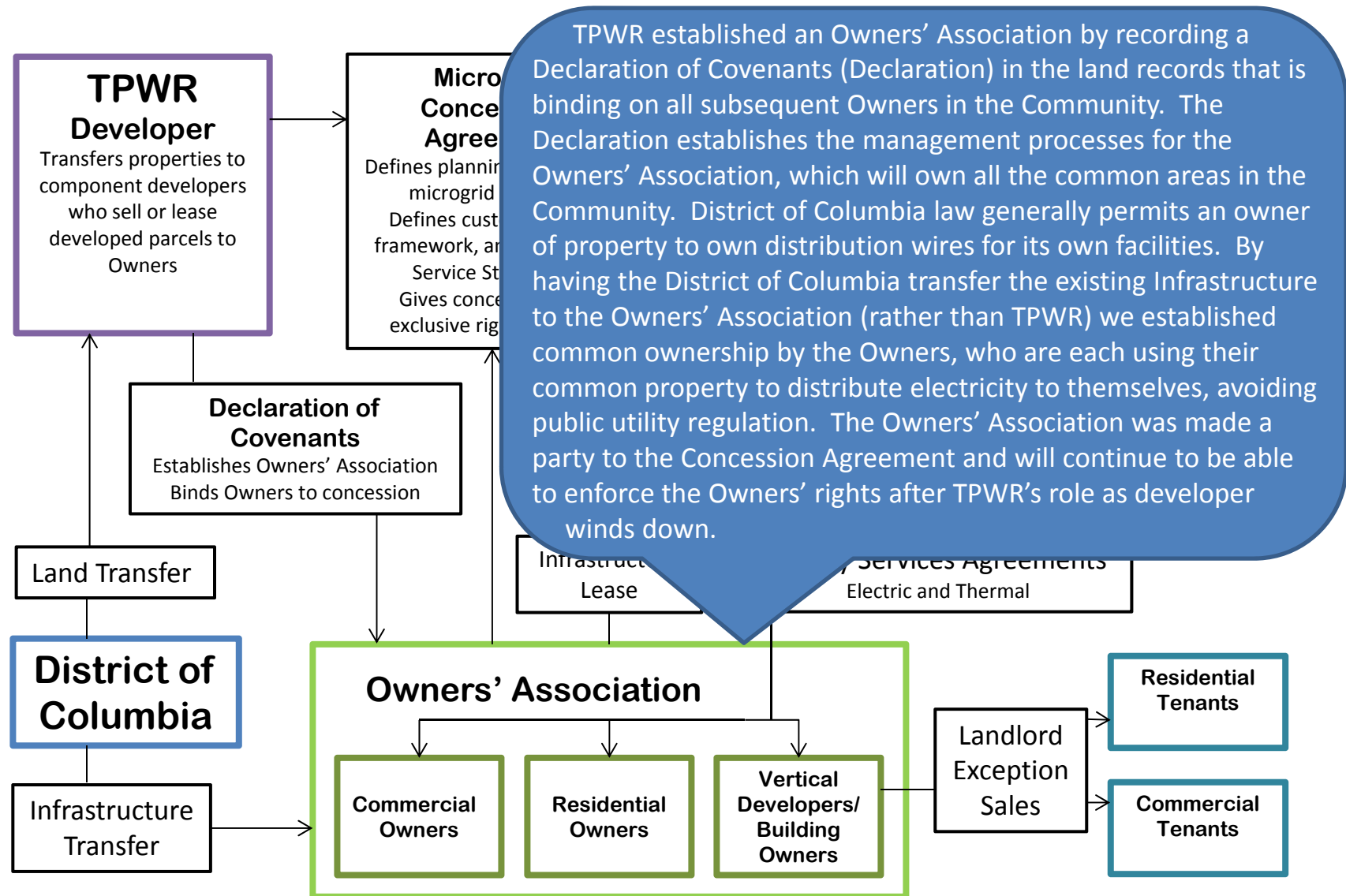
The Parks at Walter Reed – Microgrid Structure



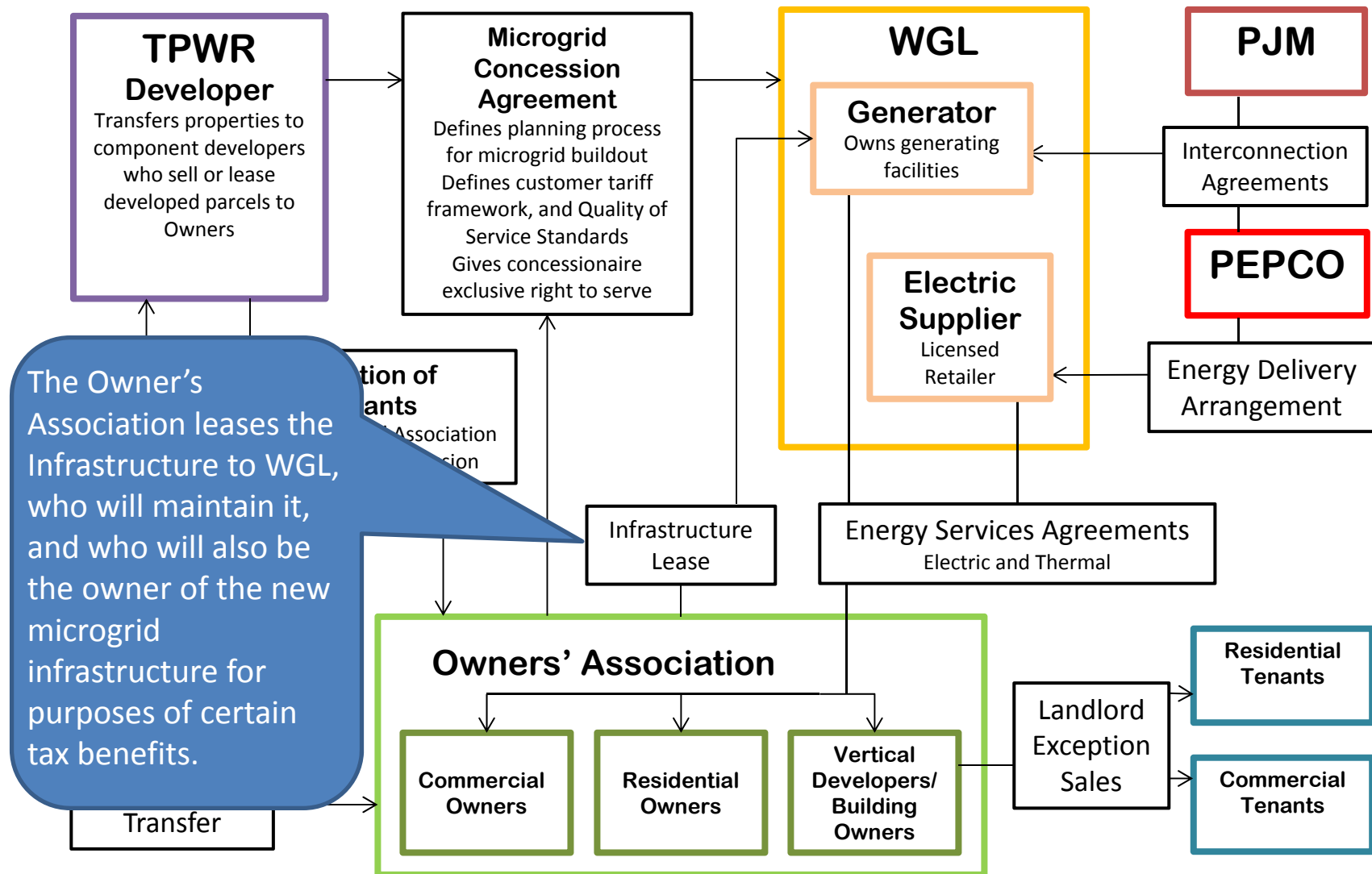
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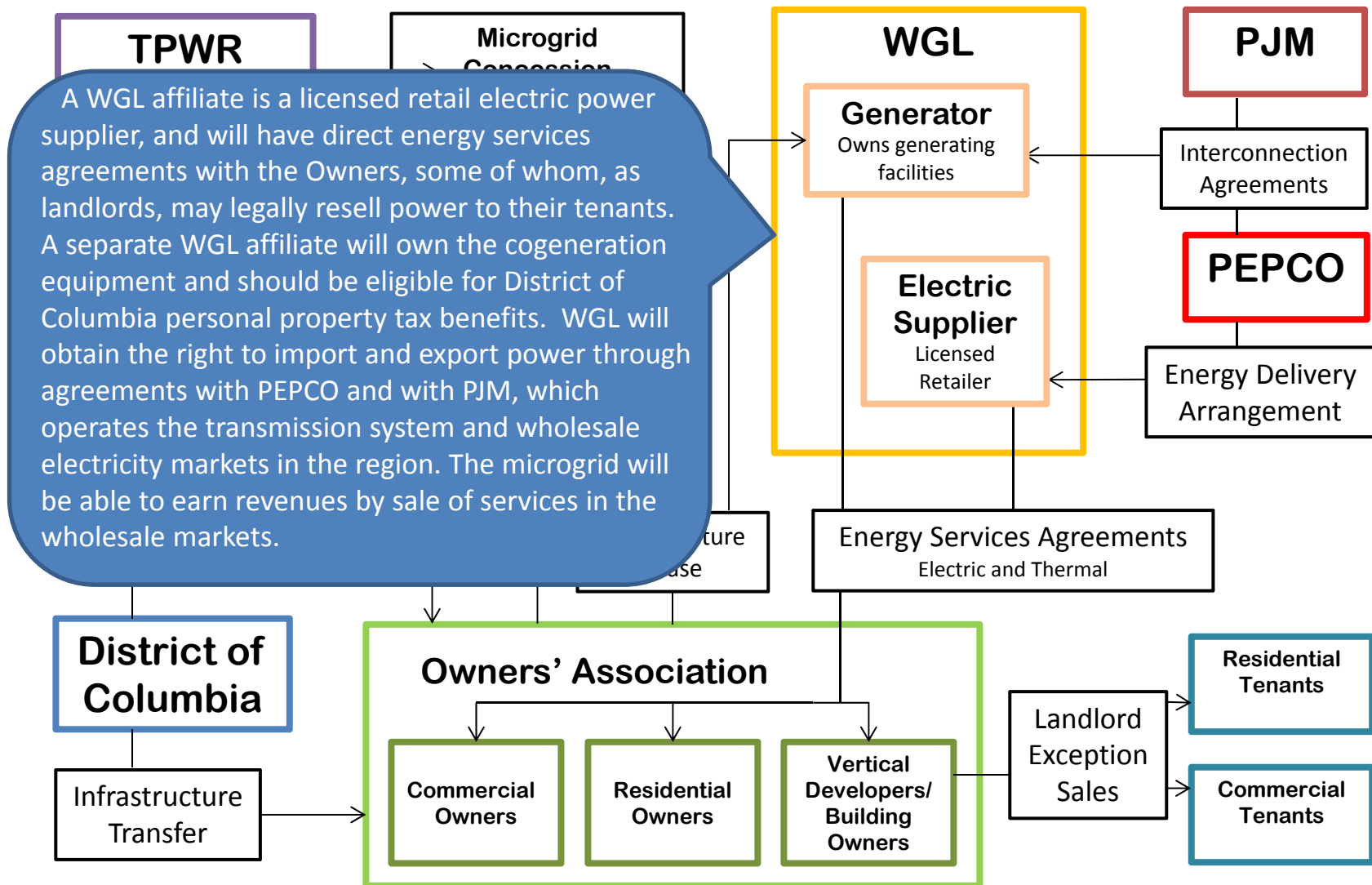
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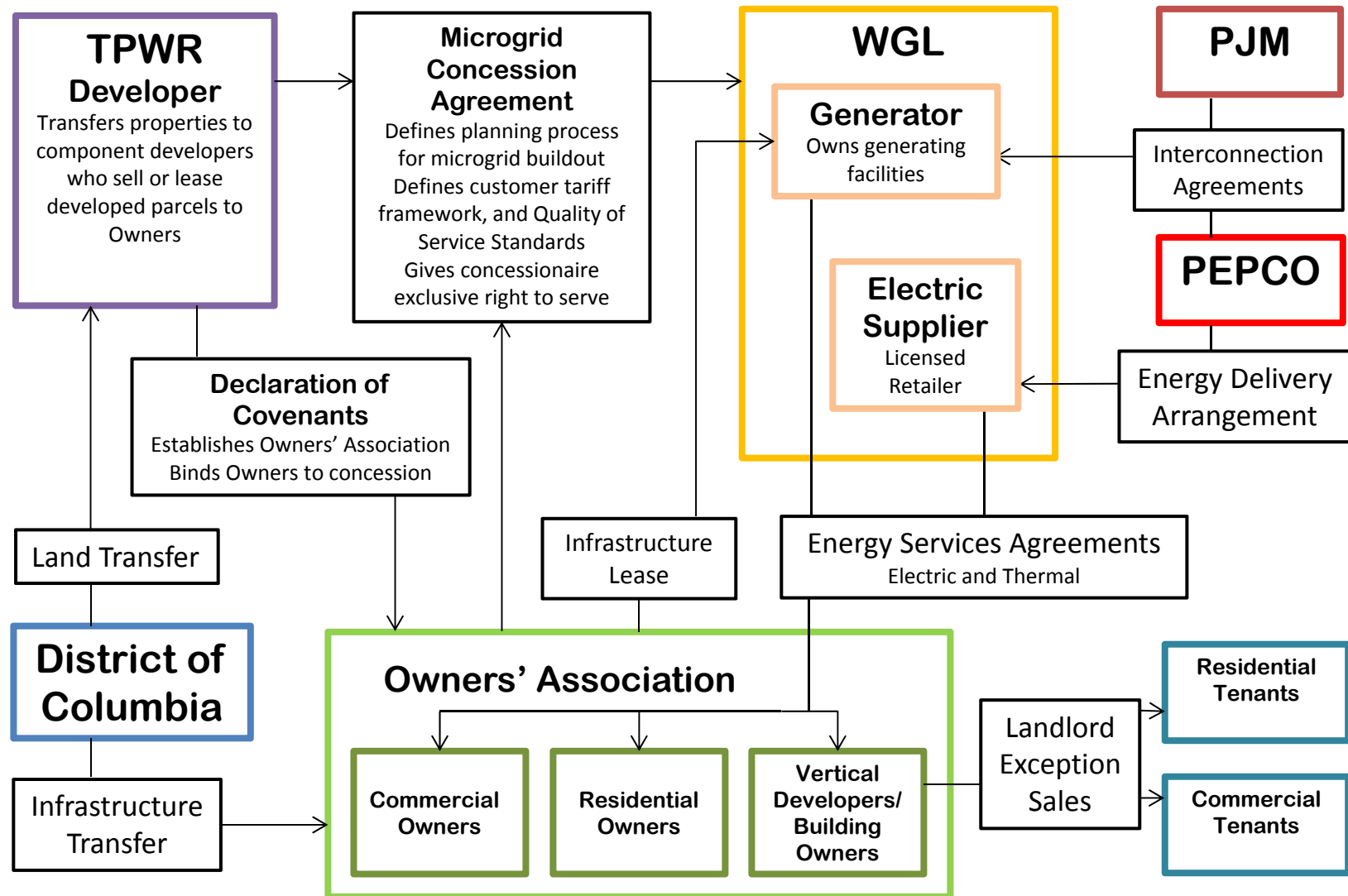
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The Parks at Walter Reed – Microgrid Structure



The Parks at Walter Reed – Microgrid Structure



Microgrid Finance

- Owner financed microgrids look like energy retrofits
 - Controls, HVAC equipment, storage are typical for energy retrofits
 - Ancillary services revenues don't come with long term contracts
 - Energy savings aren't a "revenue stream" to pledge
 - Generation is mostly used on site
- The techniques that work for energy retrofits work for microgrids
- If there is a significant generation component, it may make sense to do a companion financing

Questions

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“The economy is a subset of the ecology”