

TSSDS Utilities Outliner

1. General Comments (Content Issues)

- Move all general type groupings to the bottom of each entity list and refer to object 'not elsewhere classified' but within the class.
- For all the components there is no distinction between facilities which are proposed or under construction.

2. Additions (Content Issues)

- Additional entity types:
 - natural_gas_storage_area(point) - underground natural gas storage
 - leak_locations_point
 - telemetrics
 - hubs
 - wells
- Leak point - where stuff escapes from the contained vessel or line.
- Hubs - location where multiple networks (ie pipelines) intersect.
- Well - extraction point for liquids or gasses from the earth (active, abandoned, gas, oil, water.....).
- Telemetrics - reading gas meters by phone or driving by.
- There needs to be a new class for combined storm/waste systems. These systems exist in older cities. There are some components that correspond to sewer and storm and some specific to combined systems such as interceptors and outfalls. More research than these comments should be used to build the entity type list for this entity class.
- New types need to be created for "lines". For example, mains and laterals should be distinct types.

3. utilities_water_system: Backflow prevention devices.

- Leak points.

3.1 water_fire_connection_point: An apparatus which dispenses fluids for use in fire management.

- No comment.

3.2 water_rectifier_point: A device that changes alternating current to direct current for an impressed current cathodic protection system on an element of the distribution system.

- No comment.

3.3 water_anode_test_station_point: A central location where anodes are tested for performance.

- No comment.

3.4 water_vent_point: A valve installed in a line to either release air trapped in the line, and/or allow air into a line to relieve a vacuum condition.

- No comment.

3.5 water_valve_point: A fitting or device used for shutting or throttling flow through a line.

- No comment.

3.6 water_treatment_unit_area: A water separation pond or other pool designed to allow solid material decomposition.

- Why not a pool or pond instead of a unit.

3.7 water_treatment_plant_area: A water treatment plant and all appurtenant equipment, buildings, and facilities relating to water treatment.

- Needs to have subsets identifying intake, pumping stations, reservoirs etc.

3.8 water_tank_point: An above or below grade receptacle or chamber for holding components on a temporary basis prior to transfer or use.

- No comment.

3.9 water_pressure_reducing_station_point: A station consists of a box/pit containing one or more pressure regulators and appurtenant shutoff valves and fittings.

- Not necessarily a box or a pit. Just leave the word station.

3.10 water_source_area: The point from which the utility is supplied a product for processing and distribution.

- This is unclear. The water source should include the watershed area but the definition should include distinctions between source types. Some utilities function just as distributors. Source types should be broken out such as river, reservoir, well etc.
- Is this a watershed definition?
- Is this an area or a point? Is a water intake, or is it the water supply source?
- If this is referring to a well or surface water intake then the definition should be changed. A source area for a well should be defined as a "contributing area" and "point" should be changed to an area.
- The title water_source_area contradicts the definition "The point...". Suggest that the _area be dropped and the definition be changed to "the source of the product, i.e., reservoir, stream, groundwater. Point seems to refer to an intake which is defined in another entity type.

3.11 water_reservoir_area: A body of water which supplies water to a water distribution system.

- Should be a subset under water_source_area.

3.12 water_regulator_reducer_point: A pressure regulator automatically reduces the pressure on the downstream side of the valve to a preset magnitude.

- Should be under PRV.

3.13 water_pump_station_point: A building in which one or more pumps operate to supply material flowing at adequate pressure to or from a distribution system.

- No comment.

3.14 water_pump_point: A mechanical device that draws material into itself through an entrance port and forces the material out through an exhaust port.

- There's got to be a better way of organizing this so that we don't have a building point on top of a pump point. Also, some pumps are not in buildings.

3.15 water_meter_point: A device installed in a line for measuring the quantity and or rate of water flowing to a facility or through a section of line.

- Should also include meter pits and interconnects.

3.16 water_marker_point: A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc.

- No comment.

3.17 water_junction_point: A box or small vault (usually concrete, brick, or cast iron) located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc.

- The definition should discriminate between the structure and what the structure contains. The reducer station definition convolutes the "structure\component" issue as well.

3.18 water_line: A pipe used to carry a substance from location to location (main line, service line, vent line, etc).

- This should be broken out into different entity types not all lumped together: Mains, service lines (laterals) vents, abandoned lines, fire lines, etc. This is because you would want them on different coverages.

3.19 water_intake_point: The location where water is allowed into the water distribution system.

- Not necessarily where it enters the distribution system, could be at the source.

3.20 water_hydrant_point: An apparatus which dispenses fluids.

- Should be an attribute or subset under water_fire_connection_point.

3.21 water_system_flow_direction_arrow_point: A flow direction arrow indicates the direction of flow through a line, valve, or component.

- The flow has to be an attribute. Also it can at time change direction.

3.22 water_fitting_point: A fitting is an item used to connect, cap, plug or otherwise alter a pipe.

- No comment.

3.23 water_anode_point: A material used for water distribution that is electrically connected to a less electrolytically active material so that it will oxidize in the place of the less active material.

- Could this be combined with water_anode_test_station_point?

4. utilities_wastewater_system

- There is no capacity to record information on private septic system variables such as leach field area, sand mounds, pumper truck connection points.

4.1 wastewater_drain_field_area: The area of influence where perforated pipe placed in gravel trenches carries effluent from a waste storage containment for percolation into the earth.

- No comment.

4.2 wastewater_septic_tank_point: Typically, a below grade receptacle or chamber in which solid organic waste is decomposed and purified by anaerobic bacteria.

- No comment.

4.3 wastewater_fitting_point: A fitting is an item used to connect, cap, plug or otherwise alter a pipe.

- No comment.

4.4 wastewater_valve_point: A fitting or device used for shutting or throttling flow through a line.

- No comment.

4.5 wastewater_treatment_unit_area: A waste water treatment plant and all appurtenant equipment, buildings, and facilities relating to water treatment.

- This is lumping too much into one definition. Needs subsets of pumping stations, grinders, interceptors, etc
- In other words see_wastewater_treatment_plant_area below, that should be one entity type, the collection facility should be another, etc.

4.6 wastewater_treatment_plant_area: Equipment; or a structure containing equipment, processes, piping, or components; used to treat and remove unwanted constituents.

- No comment.

4.7 wastewater_disposal_tank_point: An above or below grade receptacle or chamber for holding components on a temporary basis prior to transfer or use.

- No comment.

4.8 wastewater_pump_ejector_station_point: A building in which one or more pumps operate to supply material flowing at adequate pressure to or from a distribution system.

- No comment.

4.9 wastewater_pump_point: A mechanical device that draws material into itself through an entrance port and forces the material out through an exhaust port.

- Should be better characterized than a point over a point.

4.10 wastewater_oil_water_separator_point: A device or structure placed in the waste stream to separate water from oil products.

- No comment.

4.11 wastewater_neutralizer_point: A receptacle or chamber, which by chemical reactions with reactant materials in the receptacle, makes liquid waste passing through the receptacle chemically neutral.

- No comment.

4.12 wastewater_meter_point: A device installed in a line for measuring the quantity and or rate of water through a section of line.

- No comment.

4.13 wastewater_marker_point: A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc.

- No comment.

4.14 wastewater_junction_point: A box or small vault (usually concrete, brick, or cast iron) located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc.

- Is box\vault manhole a truly interchangeable definition? In some cases, yes but not consistently enough to include in the same definition.

- Maybe there needs to be subsets under this, one of which would be manhole.

4.15 wastewater_line: A pipe used to carry a substance from location to location (main line, service line, vent line, etc).

- The types of wastewater lines should be itemized such as service, main, abandoned, etc

4.16 wastewater_lagoon_area: A shallow man made pool or pond for the purpose of providing treatment of domestic wastewater.

- Not necessarily shallow.

4.17 wastewater_grit_chamber_point: A chamber designed to remove sand, gravel, or other heavy solids that have subsiding velocities or specific gravities substantially greater than those of the organic solids in the waste water.

- No comment.

4.18 wastewater_grease_trap_point: A tank which separates grease from water, collects the grease for removal, and allows the water to exit.

- No comment.

4.19 wastewater_flow_direction_arrow_point: A flow direction arrow indicates the direction of flow through a line, valve, or component.

- This has to be changed to an attribute. Difficult as it is to accept it goes both ways as well.

4.20 wastewater_filtration_bed_area: A below grade system consisting of perforated piping installed in sand or gravel beds or trenches designed to permit the uniform distribution and absorption of effluent from a septic tank or aerobic unit into the soil.

- No comment.

4.21 wastewater_downspout_point: A pipe normally attached to the side of a building or structure which conveys rainfall runoff from the roof area to the ground surface or an underground collection system.

- No comment.

5. utilities_storm_system

5.1 storm_sewer_discharge_point: Any location where storm sewer pipes directly discharge effluent.

- No comment.

5.2 storm_sewer_flood_area: Areas where the storm sewer drainage capacity has been exceeded resulting in localized flooding.

- No comment.

5.3 storm_sewer_culvert_line: Interception and removal of ground water or surface water.

- No comment.

5.4 storm_sewer_fitting_point: A fitting is an item used to connect, cap, plug or otherwise alter a pipe.

- No comment.

5.5 storm_sewer_valve_point: A fitting or device used for shutting or throttling flow through a line.

- No comment.

5.6 storm_sewer_stilling_basin_point: The location where the energy from turbulent water flow is reduced.

- No comment.

5.7 storm_sewer_pump_station_point: A building in which one or more pumps operate to supply material flowing at adequate pressure to or from a distribution system.

- No comment.

5.8 storm_sewer_pump_point: A mechanical device that draws material into itself through an entrance port and forces the material out through an exhaust port.

- See comments above re pumping stations.

5.9 storm_sewer_open_drainage_line: Interception and removal of ground water or surface water by natural means.

- No comment.

5.10 storm_sewer_oil_water_separator_point: A device or structure placed in the water stream to separate water from oil products.

- No comment.

5.11 storm_sewer_marker_point: A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc.

- No comment.

5.12 storm_sewer_junction_point: A box or small vault (usually concrete, brick, or cast iron) located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc

- No comment.

5.13 storm_sewer_line: A pipe used to carry a substance from location to location (main line, service line, vent line, etc).

- No comment.

5.14 storm_sewer_inlet_point: The location where water is collected and received into the utility system.

- This needs to be clarified because most government models describe the inlet as actually the outlet of the system. Get somebody who does storm water modeling.
- No comment.

5.15 storm_sewer_headwall_point: A wall (of any material) at the end of a culvert or drain to serve one or more of the following purposes: protect fill from scour or undermining; increase hydraulic efficiency, divert direction of flow, and serve as a retaining wall

- No comment.

5.16 storm_sewer_flow_direction_arrow_point: A flow direction arrow indicates the direction of flow through a line, valve, or component.

- This has to be annotation. The information about the direction needs to be an attribute.

5.17 storm_sewer_drainage_divide_line: The border of a drainage basin where one side directs runoff to one basin and the other side directs runoff to a different basin.

- No comment.

5.18 storm_sewer_drainage_basin_area: An area in which surface runoff collects and from which it is carried by a drainage system.

- Would underground structures such as a cistern be included, or placed in another feature type?

5.19 storm_sewer_downspout_point: A pipe normally attached to the side of a building or structure which conveys rainfall runoff from the roof area to the ground surface or an underground collection system.

- No comment.

6. utilities_natural_gas_system

- Additional entity types:
 - natural_gas_storage_area(point) - underground natural gas storage
 - leak_locations_point
 - telemetrics
 - hubs
 - wells

6.1 natural_gas_rectifier_point: A device that changes alternating current to direct current for an impressed current cathodic protection system on an element of the distribution system.

- No comment.

6.2 natural_gas_anode_test_station_point: A central location where anodes are tested for performance.

- May not be centralized, commercial test stations are usually distributed along network.

6.3 natural_gas_valve_point: A fitting or device used for shutting or throttling flow through a line.

- No comment.

6.4 natural_gas_tank_point: An above or below grade receptacle or chamber for holding components on a temporary basis prior to transfer or use.

- Tank is for holding gas not components.

6.5 natural_gas_source_point: The point from which the utility is supplied a product for processing and distribution.

- Is this a well. or is it a transfer point—too ambiguous.
- Replace 'utility' with 'natural_gas'.
- Replace 'product' with 'natural_gas'.
- New definition--The point from which natural gas is supplied for processing & distribution.

6.6 natural_gas_regulator_reducer_point: A pressure regulator automatically reduces the pressure on the downstream side of the valve to a preset magnitude.

- Remove reducer from the name or use pressure reducer.

6.7 natural_gas_pump_station_point: A building in which one or more pumps operate to supply material flowing at adequate pressure to or from a distribution system.

- To supply natural_gas.
- There is no 'from' in a distribution system.
- Destination might be storage area, or source_point, or along transmission lines.
- This is more commonly called a compressor station (natural_gas_compressor_station_point).

6.8 natural_gas_pump_point: A mechanical device that draws material into itself through an entrance port and forces the material out through an exhaust port.

- Natural_gas not material.
- Change pump to compressor (i.e. natural_gas_compressor_point).

6.9 natural_gas_meter_point: A device installed in a line for measuring the quantity and or rate of gas to a facility or through a section of line.

- Volume is usually measured, not rate.

6.10 natural_gas_marker_point: A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc.

- Important to have as attribute the phone # of the local one call center.

6.11 natural_gas_junction_point: A box or small vault (usually concrete, brick, or cast iron) located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc.

- No comment.

6.12 natural_gas_line: A pipe used to carry a substance from location to location (main line, service line, vent line, etc).

- Natural gas not a substance.
- Gathering, storage in etc.

6.13 natural_gas_light_point: A point graphic representing the location of a gas light fixture. A gas light fixture utilizes gas as it's energy source and contains a flame used for illumination of an area.

- This definition contains geometry.
- New definition--a gas light fixture for illumination.

6.14 natural_gas_flow_direction_arrow_point: A flow direction arrow indicates the direction of flow through a line, valve, or component.

- No comment.

6.15 natural_gas_fill_point: Location where gas is control discharged to users.

- Is this propane tank filling or CNG?

6.16 natural_gas_fitting_point: Hardware used to cap, plug, or join pieces of pipe.

- What about elbows in the domain.

6.17 natural_gas_anode_point: A material used for water distribution that is electrically connected to a less electrolytically active material so that it will oxidize in the place of the less active material.

- Gas distribution not water.

7. utilities_industrial_system

7.1 industrial_waste_fitting_point: A fitting is an item used to connect, cap, plug or otherwise alter a pipe.

- Should cap or plug be considered as a separate entity type. Additional classifications might need to be added. Definition is reasonable, otherwise.

7.2 industrial_waste_valve_point: A fitting or device used for shutting or throttling flow through a line.

- No comment.

7.3 industrial_waste_treatment_plant_area: Equipment; or a structure containing equipment, processes, piping, or components; used to treat and remove unwanted constituents.

- No comment.

7.4 industrial_waste_tank_point: An above or below grade receptacle or chamber for holding components on a temporary basis prior to transfer or use.

- Yes. Argued over the use of "components" in the definition. Suggest use of another term in definition.

7.5 industrial_waste_pump_station_ejector_point: A building in which one or more pumps operate to supply material flowing at adequate pressure to or from a distribution system.

- No comment.

7.6 industrial_waste_pump_point: A mechanical device that draws material into itself through an entrance port and forces the material out through an exhaust port.

- Add for the purpose of circulation of material at a higher pressure.

7.7 industrial_waste_oil_water_separator_point: A device or structure placed in the waste stream to separate water from oil products.

- No comment.

7.8 industrial_waste_neutralizer_point: A receptacle or chamber, which by chemical reactions with reactant materials in the receptacle, makes liquid waste passing through the receptacle chemically neutral.

- No comment.

7.9 industrial_waste_meter_point: A device installed in a line for measuring the quantity and or rate of waste through a section of line.

- Substitute volume for quantity.

7.10 industrial_waste_marker_point: A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc.

- No comment.

7.11 industrial_waste_junction_point: A box or small vault (usually concrete, brick, or cast iron) located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc.

- No comment.

7.12 industrial_waste_line: A pipe used to carry a substance from location to location (main line, service line, vent line, etc).

- No comment.

7.13 industrial_waste_lagoon_area: A shallow man made pool or pond for the purpose of holding industrial waste.

- No comment.

7.14 industrial_waste_grit_chamber_point: A chamber designed to remove sand, gravel, or other heavy solids that have subsiding velocities or specific gravities substantially greater than those of the organic solids in the waste water.

- No comment.

7.15 industrial_waste_flow_direction_arrow_point: A flow direction arrow indicates the direction of flow through a line, valve, or component.

- No comment.

8. utilities_heat_cool_system

- Heat_cool_rectifier_point.
- A device that changes alternating current to direct current for an impressed current cathodic protection system.

8.1 heat_cool_anchor_point: A structure, typically concrete, used to either guide the expansion of pipes or used to fix the movement of some part of the expansion section.

- No comment.

8.2 heat_cool_anode_point: A device used in utility distribution systems that is electrically connected to a less electrolytically active material so that it will oxidize in the place of the less active material.

- No comment.

8.3 heat_cool_anode_test_station_point: A central location where anodes are tested for performance.

- No comment.

8.4 heat_cool_fitting_point: A fitting is an item used to connect, cap, plug or otherwise attach to a pipe.

- No comment.

8.5 heat_cool_flow_direction_arrow_point: A flow direction arrow indicates the direction of flow through a line, valve, or component.

- No comment.

8.6 heat_cool_junction_point: A box or small vault (usually concrete, brick, or cast iron) located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc.

- No comment.

8.7 heat_cool_line: A pipe used to carry a substance from location to location (main line, service line, vent line, etc).

- No comment.

8.8 heat_cool_marker_point: A sign, concrete monument, etc., installed either directly above or immediately adjacent equipment marking its location.

- No comment.

8.9 heat_cool_meter_point: A device installed in a line for measuring the quantity and or rate of water to a facility or through a section of line.

- No comment.

8.10 heat_cool_plant_area: A building or structure containing boilers, furnaces, chillers, pumps and appurtenant equipment to produce the water temperature/pressure combinations which are distributed to other buildings and facilities.

- No comment.

8.11 heat_cool_pump_point: A mechanical device that draws material into itself through an entrance port and forces the material out through an exhaust port.

- No comment.

8.12 heat_cool_rectifier_point: A device that changes alternating current to direct current for an impressed current cathodic protection system.

- No comment.

8.13 heat_cool_regulator_point: A pressure regulator automatically reduces the pressure on the downstream side of the valve to a preset magnitude.

- No comment.

8.14 heat_cool_valve_point: A fitting or device used for shutting or throttling flow through a line.

- No comment.

9. utilities_general

- Manholes and pedestals are not included as entity types. Suggested addition.

- These only apply to above ground utilities.

9.1 utility_pole_guy_point: A support configuration, which generally includes connecting hardware, cables, and anchor components, used to stabilize structures (poles, towers, etc.). Down guys typically connect to the structures at key stress points and extend to an anchor at the gro.

- Gro --> ground (typographic error?)
- This seems to be a very narrow definition of utility pole, or street pole.

9.2 utility_pole_tower_point: A structure used to elevate wires, cables, or other lines above the ground surface.

- Utility_pole_or_tower_point is a better name. Does this include street light poles?

10. utilities_fuel_system

- There are combo devices that pump, strain & meter all at once. Should they not be a class? How do we represent as separate if single device?

10.1 fuel_filter_strainer_point: A device through which fuel is passed to remove impurities to the fuel. Usually placed in fuel lines near fill points.

- No comment.

10.2 fuel_fitting_point: A fitting is an item used to connect, cap, plug or otherwise alter a pipe.

- No comment.

10.3 fuel_rectifier_point: A device that changes alternating current to direct current for an impressed current cathodic protection system on an element of the distribution system.

- No comment.

10.4 fuel_anode_test_station_point: A central location where anodes are tested for performance.

- No comment.

10.5 fuel_anode_point: A material used for fuel distribution that is electrically connected to a less electrolytically active material so that it will oxidize in the place of the less active material.

- No comment.

10.6 fuel_valve_point: A fitting or device used for shutting or throttling flow through a line.

- No comment.

10.7 fuel_tank_point: An above or below grade receptacle or chamber for holding components on a temporary basis prior to transfer or use.

- No comment.

10.8 fuel_regulator_reducer_point: A pressure regulator automatically reduces the pressure on the downstream side of the valve to a preset magnitude.

- Name fuel_regulator_point.

10.9 fuel_pump_booster_station_point: A building in which one or more pumps operate to supply material flowing at adequate pressure to or from a distribution system.

- No comment.

10.10 fuel_pump_point: A mechanical device that draws material into itself through an entrance port and forces the material out through an exhaust port.

- No comment.

10.11 fuel_oil_water_separator_point: A filtering device placed in the fuel stream specifically to remove oil and water from the fuel.

- No comment.

10.12 fuel_meter_point: A device installed in a line for measuring the quantity and or rate of fuel to a facility or through a section of line.

- No comment.

10.13 fuel_marker_point: A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc.

- No comment.

10.14 fuel_junction_point: A box or small vault (usually concrete, brick, or cast iron) located below grade with above grade access where pipes intersect. The manhole also houses associated fittings, valves, meters, etc.

- No comment.

10.15 fuel_line: A pipe used to carry a substance from location to location (main line, service line, vent line, etc).

- No comment.

10.16 fuel_flow_direction_arrow_point: A flow direction arrow indicates the direction of flow through a line, valve, or component.

- No comment.

10.17 fuel_hydrant_point: Location where fuel is control discharged to users.

- No comment.

10.18 fuel_air_eliminator_point: A device or structure placed in the fuel distribution system to separate air from petroleum products.

- No comment.

11. utilities_electrical_system

11.1 electrical_pedestal_point: An above ground enclosure which provides access to underground cables.

- Should this be moved to utilites_general since it can be shared with electrical and telecom utilites.

11.2 electrical_transformer_vault_point: An enclosure housing one or more transformers.

- No comment.

11.3 electrical_transformer_bank_point: A location containing one or more transformers.

- No comment.

11.4 electrical_transformer_point: A device for increasing or decreasing voltage levels in an electrical system.

- Maybe replace system with circuit?

11.5 electrical_switch_point: A device which closes and opens (connects and disconnects) an electrical circuit.

- No comment.

11.6 electrical_substation_point: A facility in an electrical system where the voltage is reduced from transmission levels to distribution levels.

- In some cases, substations can be used for more than voltage reduction. i.e. transmission voltage increase, line distribution, etc.

11.7 electrical_splice_point: The connection of two separate cables at their ends or the tapping of a conductor along the path of another conductor.

- No comment.

11.8 electrical_regulator_point: An electrical device that maintains its output voltage at a certain level even though its input voltage varies in a certain range over time.

- No comment.

11.9 electrical_motor_point: A machine that converts electrical energy into mechanical energy.

- Maybe change mechanical energy to kinetic?

11.10 electrical_meter_point: A device installed in a line for measuring the electrical power supplied to a facility or through a section of line.

- No comment.

11.11 electrical_marker_point: A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc., identifying the location of the electrical equipment.

- No comment.

11.12 electrical_junction_point: A box or small vault (usually concrete, brick, or metal) typically located below grade with above grade access in which cables intersect, connect, or pass through.

- No comment.

11.13 electrical_ground_point: The location where the electrical configuration is grounded.

- Configuration is a poor choice. Try "circuit"

11.14 electrical_generator_point: A machine which converts mechanical energy into electrical energy.

- Try kinetic energy instead of mechanical.

11.15 electrical_ductbank_line: A tubular structure that provides protection for underground cables contained in conduit.

- No comment.

11.16 electrical_capacitor_point: An electrical device placed in a circuit to correct power factor by adding reactive power to the circuit.

- No comment.

11.17 electrical_cable_line: A group of conductors used to carry electrical energy from point to point.

- Suggest replacing conductors with cable and or wire.

11.18 electrical_bus_line: A rigid metallic conductor (copper or aluminum), typically in the form of a flat bar, angle stock, or square tubing.

- Can an electrical bus also be non-conductive above ground conduit?

12. utilities_electrical_ext_light

12.1 exterior_lighting_point: Locations of point sources of general external lighting.

- Add "exclusive of the pole or supporting structure".

13. utilities_cntrl_mntr_system

13.1 energy_control_monitoring_marker_point: A sign, concrete monument, etc. installed either directly above or immediately adjacent to underground lines, bends, fittings, etc.

- No comment.

13.2 energy_control_monitoring_junction_point: A box or small vault located below grade with above grade access where cables intersect, connect, or pass through.

- No comment.

13.3 energy_control_monitoring_ductbank_line: A structure containing multiple conduits used to protect underground cables.

- Why is this a "line"? Also, the relationship between this and energy_control_monitoring_junction_point needs to be clarified.

13.4 energy_control_monitoring_device_point: Devices used in an energy monitoring/control system to collect, process or transmit data signals.

- No comment.

13.5 energy_control_monitoring_cable_line: Data transmission media, typically fiber optics or shielded twisted-pair.

- No comment.