

# Approach to Land Use Inputs in Hydraulic Model

*Sewer Infrastructure Advisory Committee*

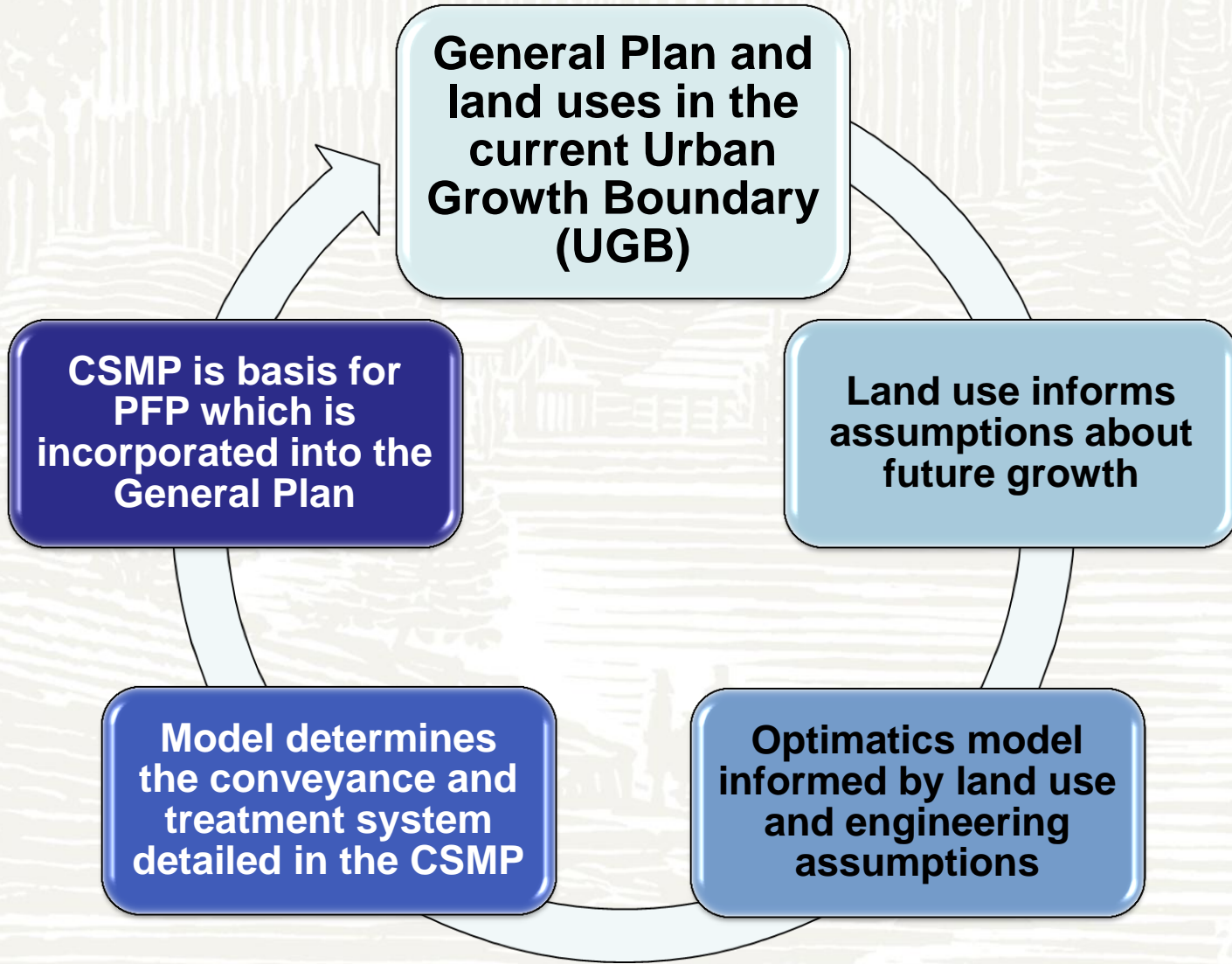


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2/7/13

# Relationship: CSMP & PFP



**CSMP =**  
Collection  
Systems  
Master  
Plan

**PFP =**  
Public  
Facilities  
Plan

# CSMP & UGB: Big Picture



- CSMP should reflect requirements for Public Facility Plans or PFPs (Goal 11, OAR 660-011)
- Based on acknowledged land uses in **current UGB** (vs. unadopted plans)

- Subject to City Council policy direction and goals

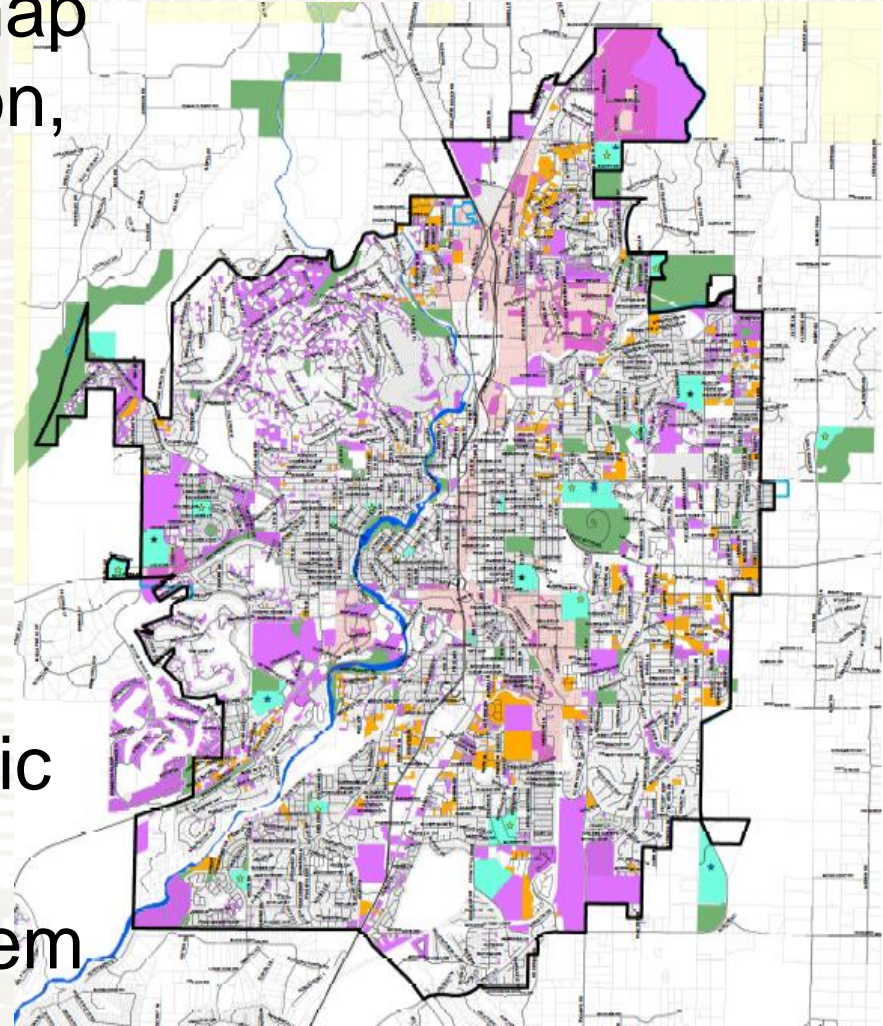


# Task at Hand

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- **Product** - Database and map calculating the type, location, and density of future development in Bend's existing UGB at *buildout*
- **Guidance from SIAG** - Regarding land use *assumptions* in the hydraulic model resulting in the optimized wastewater system



# Base Assumptions

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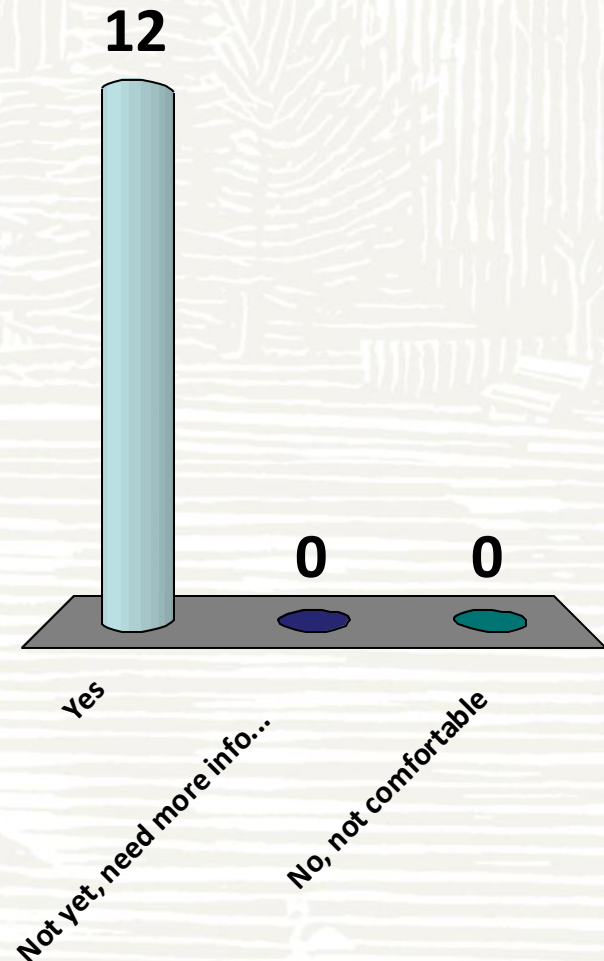
- **Development on Platted/Approved Lots**- Development densities on individual parcels. *Recommendation:* Assume what was approved by the city is constructed, and that single-lots are developed with a single unit.
- **Rights-of-way** - Amount of right-of-way taken out of large acreages . *Recommendation:* Use 21% from recent research approved by Land Conservation and Development Commission (LCDC).
- **Parks and Schools** - Location of future large parks and elementary, middle, and high schools . *Recommendation:* Use the 2010 School Siting Plan for best estimates and coordinate with Bend-Metro Parks & Recreation District.
- **People per Household** – Factor converts households to people. *Recommendation:* 2.4 people/household is a stable estimate per 2010 US Census.

*Is SIAG comfortable using these assumptions with additional documentation?*



# Are you comfortable with these base assumptions?

1. Yes
2. Not yet, need more information
3. No, not comfortable



# Density Assumptions



- **Density** - Future residential and employment levels on vacant lands (approximately 3,500 vacant acres).
- **Redevelopment** – Density of redevelopment of residential land based on current plan designations (approximately 700 acres).

Zone	Lowest Density	Medium Density	Highest Density
RL	1.1 dwellings per gross acre	1.7	2.2
RS	2.0	4.7	7.3
RM	7.3	14.5	21.7
RH	21.7	32.4	43

- *Recent analysis suggests residential densities have been at or near the lower end of the allowed range*
- *Redevelopment rates are low and tend to be replacement rather than at much higher densities*

**RL** = Residential Low Density    **RS** = Residential Standard Density  
**RM** = Residential Medium Density    **RH** = Residential High Density

# Applying the Assumptions



5 Acres

Vacant

1 Ac 1 Ac

1 Ac 1 Ac

21% Right of Way



1 Ac

1 Ac

Parks & Schools

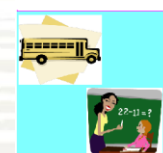
X

Density  
(4 D.U./AC.)

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**FLOW** ←

20 People  
(2.4/Household)

8 Households



# Scenarios & Considerations

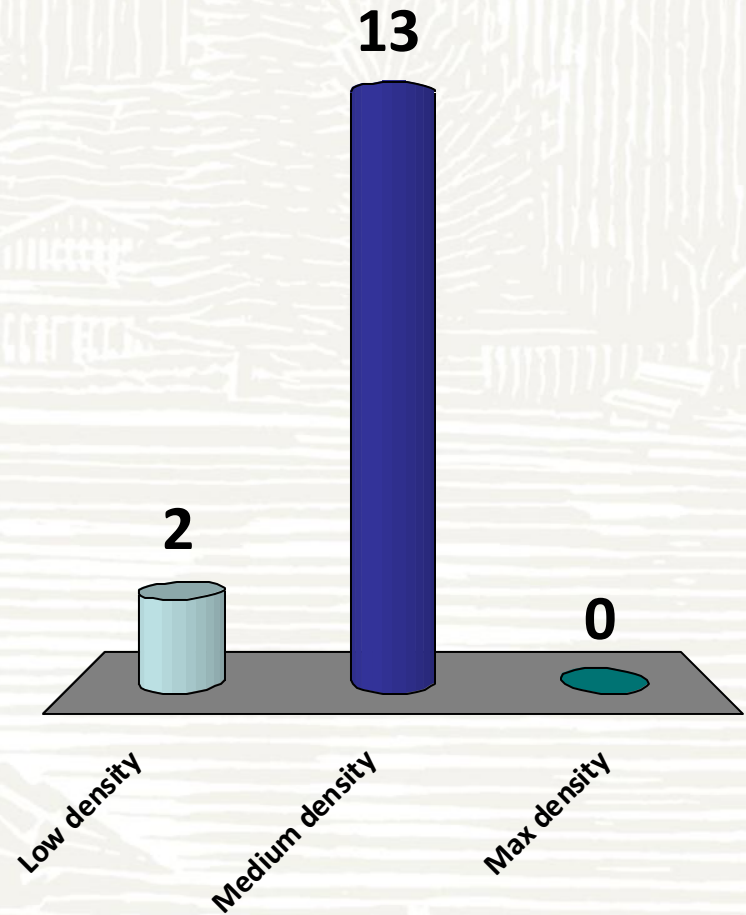


Scenario	Description	Risks
<b>A: Low Density</b>	<ul style="list-style-type: none"> <li>Existing development patterns</li> <li>~4 d.u./ac, 500 d.u. CAP, 600 d.u. transit corridors</li> <li>~110,000 population</li> </ul>	<ul style="list-style-type: none"> <li>Underbuilt system possibly less resilient</li> <li>LCDC rejected assumptions in UGB expansion</li> </ul>
<b>B: Medium Density</b>	<ul style="list-style-type: none"> <li>Bend slightly more urban</li> <li>More flexible system</li> <li>~6 d.u./ac, 1,000 d.u. CAP, 1,200 d.u. transit corridors</li> <li>~120,000 population</li> </ul>	<ul style="list-style-type: none"> <li>Development pattern not exactly what has been seen in the past</li> </ul>
<b>C: Max Density</b>	<ul style="list-style-type: none"> <li>Most density and capacity</li> <li>~8 d.u./ac, 2,000 d.u. in CAP, 2,400 d.u. in transit corridors</li> <li>~150,000 population</li> </ul>	<ul style="list-style-type: none"> <li>Not realistic from market standpoint</li> <li>Potential overbuilt for near term</li> </ul>
<b>Consideration</b>		
Additional Capacity for Special Areas	<ul style="list-style-type: none"> <li>Targets capacity for anticipated development</li> </ul>	<ul style="list-style-type: none"> <li>Some uncertainty regarding exactly how much capacity to add</li> </ul>

**d.u.**= Dwelling Unit    **CAP** = Central Area Plan    **ac** = Gross Acres

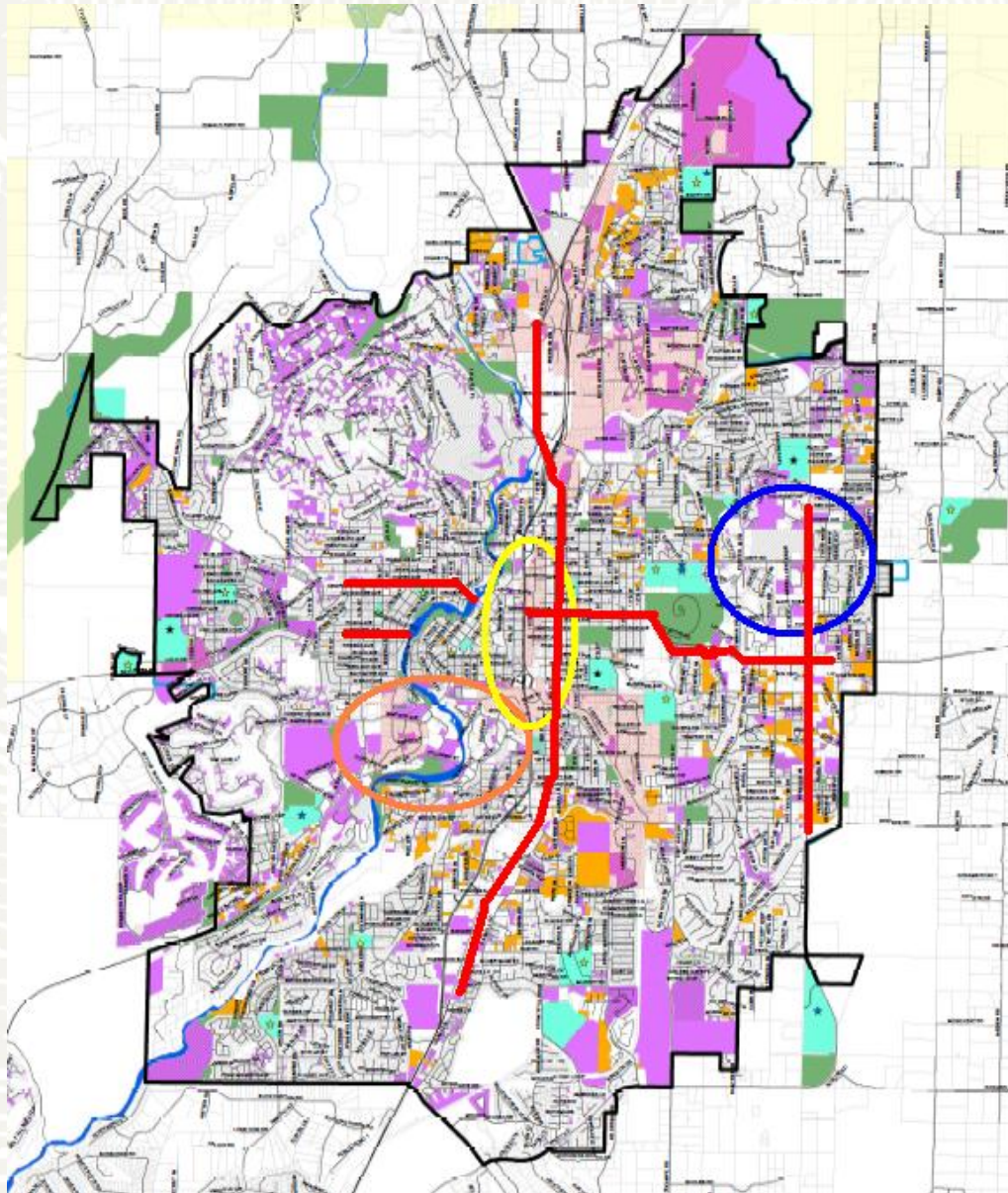
# Which scenario do you prefer?

1. Low density
2. Medium density
3. Max density





# Capacity for Special Areas

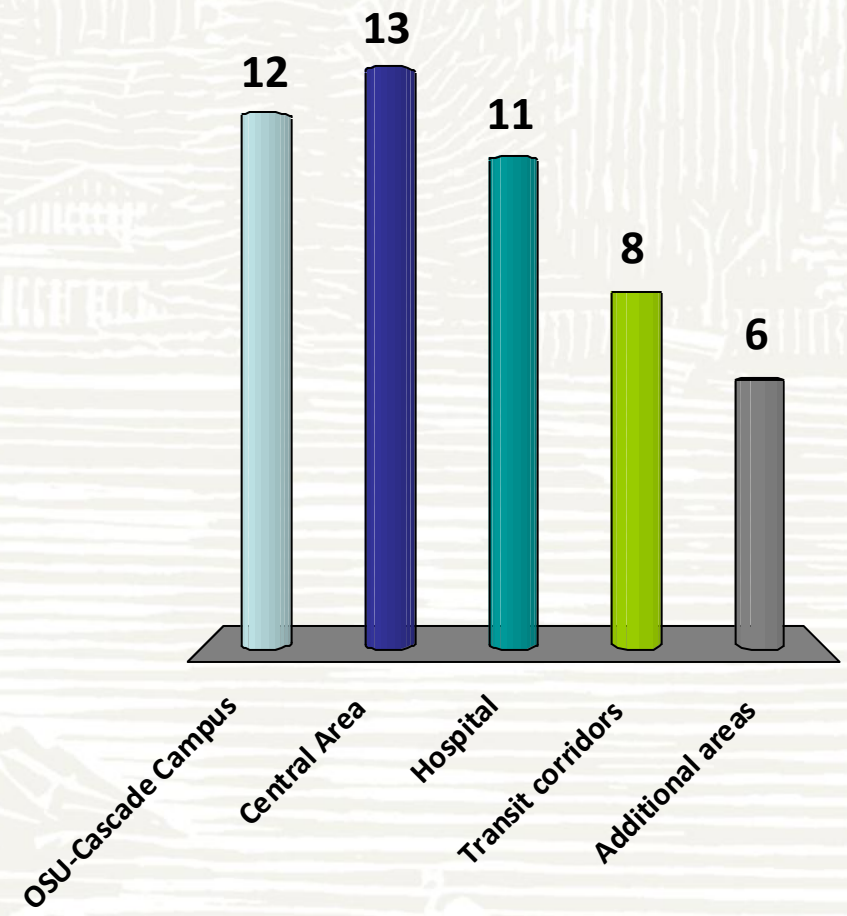


Areas such as:

- Central Area Plan (yellow)
- OSU Cascades campus (orange)
- Transit corridors (red)
- Hospital (blue)
- Additional areas?

# Which special areas should be considered?

1. OSU-Cascade Campus
2. Central Area
3. Hospital
4. Transit corridors
5. Additional areas





# Testing the Optimized Solution



## Examples:

- Higher population inside the current UGB
- Urban expansion
- These may require:
  - Council direction
  - Scope of Work adjustment