Level of Service Analysis

‘Growth Efficiency Map’

- Local government has an obligation to promote orderly, efficient growth.
- Quantifying growth efficiency is a tool that informs major planning efforts, as well as providing decision support information for incremental land use decisions.
- Vision Keeping – brings public values to local land use decision-making.
“How will we know if things are getting better? How do we know ‘good’ when we see it?”

The Biggest Innovation in Landuse Planning in last 20 years: **Benchmarks!**

Measureable Performance Standards that can be used to Evaluate progress, therefore, when related to Policies, the policies effectiveness.

“Are our policies working or not?”

Can be simple or very complicated. (in Public Process they need to understandable)

(More Hiking Trails – Linear Feet of Walkways & Trails)
(Bring more people to Downtown – Traffic Counts on Main street & Parking lots)
(Protect Sensitive Lands – Quantify areas of land sensitivity (wetlands, Floodplains, etc.)
(Reduced water consumption – measures of fresh water used & water treatment)
(Quick emergency response – Proximity to EMS)
(Walkable Elementary Schools – Average Proximity)

Community Indicators: Level of Service Norms – “Where are we Today?”
We can't begin to monitor Community Indicators without a point of beginning. GIS Tools for quantifying these Level of Service (LOS) norms

Plans with huge local support are the most likely to be adopted & implemented!

**CREATING INFORMED PARTICIPANTS**
This approach gave planners a tool to use to characterize land use suitability and analyze where highest capacity exists.
Most planners are familiar with the ‘Mchargian Process’

The Most Sensitive Lands – often deferred from development

This begs the question – Where to Grow?

Thus totally different Criteria that collectively suggest the best places to direct growth from a Growth Efficiency perspective

- Landscape Sensitivity Map – additive process in GIS
Average Proximity is a useful measure, because they can be translated into response times, walkability, linear extensions of sewer, water and roads. They are somewhat abstract because GIS level of service analysis provides results that look like: the average citizen in Williams County lives 13,728’ feet to elementary school. This is useful, because we can measure over time if that number (13,728’) gets larger or smaller. If the number gets larger, that is a reduced level of service, while a smaller number would be an improved level of service (LOS), if we assume that walkable elementary schools are a desirable characteristic.

**Methodology:**

Using address files (points) for county residents we can summarize county norms for proximity to basic public facilities and services. For Example: Red Dots on map to the right are the elementary schools in Williams County. We can measure how far each citizen is from the nearest elementary school. The average distance to an elementary school (in feet or miles) can be computer and mapped. The following map (next

- Level of Service Norms for existing Public Facilities
Residential address files – one point for each house

Proximity is Relevant because:
‘response time for police & fire’
‘walkability for schools & services’
‘linear extension of roads, sewer & water’
GIS analysis suggests that the average citizen in Williams County is 2.6 miles from an elementary school (see “NormDist2ElemSchool” in the chart, highlighted in yellow). This can be characterized as the County Norm for Elementary School Proximity. The same thing has been completed for all public facilities and services, for example: the average proximity to police/sheriff is 4.7 miles, and that can translate into response time.

The image on the left shows the 2.6 mile Level of Service Radius around each elementary school and it can be argued that growth that occurs in the red areas diminish citizens existing LOS. We can summarize the number of county citizens that live within the LOS radius and those that live below the county norm.

To the right the analysis suggests that 83% of all county citizens live within that 2.6 mile
Each LOS map for each service is numeric thus can be added to one another to create a composite view that summarizes the most efficient places within the county for future growth.
The darker green areas depict where Levels of Service are overlapping. So in the case of this Williams County initial analysis there are 14 different maps depicting the existing level of service norms, thus a total of 14 would indicate that the land is within community norms for all public services. That does exist in selected parts of Williston. Our assumption here is all services (1’s) and are of equal importance.

A more defensible methodology is to have County Residents to rank these elements, such as “Critical to Good Future Development” close to Airports is not important.

Simple Addition (0-14)
Public Meeting #1

will include an exercise that allow participants to rate the importance of all public facilities and services. With these results we can determine a county average for which elements are most important and weight them accordingly.

A survey asked citizens to weight the importance of each element, as they see it, for importance for future land use planning. 5’s being most important and 1’s (or 0’s) for the least important. The county average can then be assigned to each element as they are added together so the results directly reflect citizen values.
So How did this analysis affect the Outcomes:

1) Where Citizens Choose to Grow (place chips)

<table>
<thead>
<tr>
<th>LAND SURVEY FORM:</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Sensitive area where intensive development might not be appropriate could include the following constraints: (score each factor for how you perceive the importance of these problems, hazard and resource lands) 5 = Most Important, 1 = Least Important</td>
</tr>
<tr>
<td>Flooding (FEMA)</td>
</tr>
<tr>
<td>Coastal</td>
</tr>
<tr>
<td>Rare &amp; threatened species (tide, porpoise, etc.)</td>
</tr>
<tr>
<td>Rare &amp; threatened species (elephant, porpoise, etc.)</td>
</tr>
<tr>
<td>Critical Water Quality Areas (DOM, DRP, DLR, etc.)</td>
</tr>
<tr>
<td>Critical Recreation Areas (CRAs)</td>
</tr>
<tr>
<td>Important Agriculture Areas</td>
</tr>
<tr>
<td>Eden, Wild &amp; Farmland, etc. (shallow to water tables)</td>
</tr>
<tr>
<td>Slope slopes</td>
</tr>
<tr>
<td>Fracture zones</td>
</tr>
<tr>
<td>Public lands</td>
</tr>
<tr>
<td>Valleys and canyons</td>
</tr>
<tr>
<td>Vegetation Sensitivity Areas</td>
</tr>
<tr>
<td>Airport Landing Zone</td>
</tr>
<tr>
<td>Geologic Hazards/Subsidence Areas</td>
</tr>
<tr>
<td>Others</td>
</tr>
</tbody>
</table>

2) Which of the following factors that affect the efficiency of new growth do you think are most important to new development? (5 = Most Important, 1 = Least Importance): |
| Proximity to paved roads | 5 |
| Proximity to public sewer services | 4 |
| Proximity to public water services | 4 |
| Proximity to recreation opportunities near | 3 |
| Quick response for police | 3 |
| Quick response for fire services | 3 |
| Near existing high school | 3 |
| Near existing middle school | 3 |
| Near hospital (critical response) | 3 |
| Near library | 3 |
| County Court House/City Hall | 3 |
| Proximity to airport | 3 |
| Near hospital/clinics | 3 |
| Near post office | 3 |
| Near major roads (traffic) | 3 |
| Others | 3 |

3) Do you agree with the following statements?

- Future growth in Garfield County should be by providing public facilities and services in a manner that does not degrade the existing levels of service to local residents. (5 = Strongly agree, 1 = Strongly disagree)
- Future growth in Garfield County should be sensitive to the landscape and the existing community character, and we should prohibit development that doesn't comply with these objectives. (5 = Strongly agree, 1 = Strongly disagree)

Purse: These regulations have been made in accordance with the policies and recommendations set forth in a duly adopted comprehensive plan and have been enacted with the following purposes in mind:

1. To protect and guide the development of non-urban areas.
2. To secure safety from fire, flood, and other dangers.
3. To regulate and restrict the conversion, construction, reconstruction, alteration, repair, or use of buildings and structures, the height, number of stories and size of buildings and structures, the percentage of lot that may be occupied, the size of courts, yards, and other open spaces, the density of population, and the location and use of buildings, structures, and land for trade, industry, residence, or other purposes.
4. To lessen governmental expenditures.
5. To conserve and develop natural resources.

It is not the intent of this ordinance to prohibit or prevent the use of land or buildings for farming or any of the normal incidents of farming.

Figure 1: ZO & SR purpose clause
These two maps (Growth Efficiency and Landscape Sensitivity), created using public values, should be used to assist us at defining the most appropriate locations for future growth.

53% 1. Strongly Agree
38% 2. Agree somewhat
  6% 3. Disagree somewhat
  2% 4. Strongly Disagree
  1% 5. Don’t have an Opinion.
Grenora Played 4 Games
Ray Played 6 Games
Tioga Played 4 Games
Williston Played 8 Games
Trenton Played 2 Games

Results of Games Summarized back onto the section Map of County

County Wide Citizens Played 24 Games
All Homes Placed by All 24 Tables – “Where Citizens See Growth being Directed!”
After comp plan is completed:

• Growth Efficiency can be used to characterize the potential impacts for any parcel on the fly or those being reviewed by planning & zoning or County Commissioners.
Plans for the Entire County or Individual Parcel can be tested for Land Sensitivity
Select a Parcel and ‘Copy / Paste’ to evaluation Layer....
Coincidence with this parcel and the Land Sensitivity map is quantified – 3 constraints..
Move the parcel and automatically the analysis is invoked and new results displayed. Coincidence with this parcel and the Land Sensitivity map is quantified – 8 total constraints.
• Implementation Tools for incremental decision making (values captured during comp plan)
<table>
<thead>
<tr>
<th>Item</th>
<th>ProjectName</th>
<th>ParcelSize</th>
<th>Efficiency SCORE</th>
<th>LandSensitivity SCORE</th>
<th>Dist2BUILTareas</th>
<th>Dist2EMS</th>
<th>AcresFRM/Esoils</th>
<th>AcresWETLANDS</th>
<th>AcresFLOODfreq</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ZoneChg_Ag2Comm_MarkSelhste</td>
<td>149.95</td>
<td>10.51</td>
<td>8.18</td>
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<td>6.63</td>
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<td>2</td>
<td>ZoneChg_Ag2Rea_DonnaHaugen</td>
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<tr>
<td>3</td>
<td>MajSub_TILM Properties</td>
<td>147.04</td>
<td>12.02</td>
<td>7.51</td>
<td>1.57</td>
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<tr>
<td>4</td>
<td>ZoneChg_Ag2PropWitCUP_BakkenDevelRes</td>
<td>156.51</td>
<td>7.62</td>
<td>9.76</td>
<td>4.3</td>
<td>12.32</td>
<td>11.15</td>
<td>26.74</td>
<td>18.93</td>
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<tr>
<td>5</td>
<td>ZoneChg_Ag2PubWitCUP_BillHeddem</td>
<td>147.29</td>
<td>3.76</td>
<td>8.49</td>
<td>0</td>
<td>9.62</td>
<td>2.58</td>
<td>1.38</td>
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<tr>
<td>6</td>
<td>ZoneChg_Ag2Res_CapitolLodge</td>
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<td>7</td>
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<td>9</td>
<td>CUP_TempHousing_GorettLailim</td>
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<td>11.19</td>
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<td>10</td>
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<td>2.93</td>
<td>3.71</td>
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### Parcel Review - Level of Service

**Above or Below Existing Service Level**

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>SHAPE</td>
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<td>OBJECTID</td>
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<td>SCENARIO</td>
<td>BOCC_June12</td>
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<td>SHAPE_Length</td>
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<td>SHAPE_Area</td>
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<td>CVActive</td>
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<tr>
<td>ItemNum</td>
<td>1</td>
</tr>
<tr>
<td>ProjectName</td>
<td>ZoneChg_Ag2Comm_MarkSeleske</td>
</tr>
<tr>
<td>ParcelSize</td>
<td>149.95</td>
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</tr>
<tr>
<td>Dist2BUILTareas</td>
<td>1.49</td>
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<tr>
<td>Dist2EMS</td>
<td>4.57</td>
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<td>AcresPRIMEsoils</td>
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<td>AcresWETLANDS</td>
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</tr>
<tr>
<td>AcresFLOODfreq</td>
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</tr>
</tbody>
</table>

1: Meets LOS norms

1: Sewer/WaterLOService
2: RailroadLOService
3: PostOfficeLOService
4: PoliceLOService
5: PavedRoadLOService
6: MiddleSchoolLOService
7: LibraryLOService
8: HospClinicLOService
9: HighwayLOService
10: HighSchoolsLOService
11: FireStationEMS-LOService
12: ElemSchoolLOService
13: CollegeLOService
14: AirportLOService
Parcel Review-Level of Service
Above or Below Existing Service Level

1 - Meets LOS norms

1: Sewer/Water LOS Service
2: Railroad LOS Service
3: Post Office LOS Service
4: Police LOS Service
5: Paved Road LOS Service
6: Middle School LOS Service
7: Library LOS Service
8: Hosp/Clinic LOS Service
9: Highway LOS Service
10: High Schools LOS Service
11: Fire Station/EMS LOS Service
12: Elem School LOS Service
13: College LOS Service
14: Airport LOS Service

Item #4 – Bakken Dev.

Identify

Location: 1,210,229.163 507,200.454 Feet

Field Value
SHAPE Polygon
OBJECTID 59
SCENARIO BOCC_June12
SHAPE_Length 13059.309921
SHAPE_Area 6817680.949319
CVActive 1
ItemNum 4
ProjectName ZoneChg_Ag2PublicWithCUP_Baldu
ParcelSize 156.51
EfficiencySCORE 7.82
LandSensitivitySCORE 9.76
Dist2BUILD 4.3
Dist2EMS 12.32
AcresPRIME soils 11.15
AcresWETLANDS 26.74
AcresFLOODfreq 18.93

Identified 1 feature
Parcel Review-Level of Service
Above or Below Existing Service Level

1 - Meets LOS norms

Identification:
- Item: ItemMODE_evaluate
- Location: 1,335,745.832 433,642.704 Feet
- Field: Value
  - SHAPE: Polygon
  - OBJECTID: 60
  - SCENARIO: BOCC_June12
  - SHAPE_Length: 1014.891059
  - SHAPE_Area: 6415889.719432
  - CVActive: 1
  - ItemNum: 5
  - ProjectName: ZoneChg_AgtPublicWithCUP_BILSh
  - ParcelSize: 147.20
  - EfficiencySCORE: 3.78
  - LandSensitivitySCORE: 8.49
  - Dist2BUILTareas: 0
  - Dist2EMS: 9.62
  - AcresFRPRsolls: 2.58
  - AcresWETLANDS: 1.38
  - AcresFLOODfreq: 0

Identified 1 feature
Item #6 – Capital Lodge

Parcel Review-Level of Service

Above or Below Existing Service Level

1: Meets LOS norms
On the fly parcel specific measurements for decision support. Linked to valid benchmarks.

Better community plans
Higher levels of support!

Decision Support information for planning commissions and County Commissioners based upon values from Comprehensive Plan! (Vision keeping)