

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 landuse decisions.
- Vision Keeping brings public values to local landuse 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

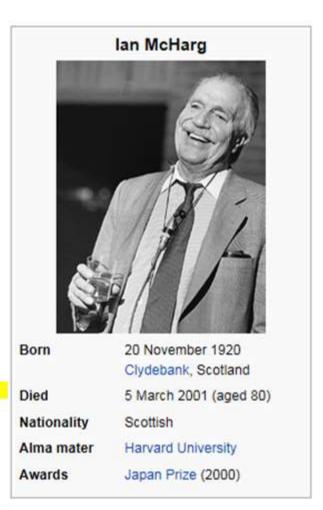
Plans with huge local support are the most likely to be adopted & implemented!

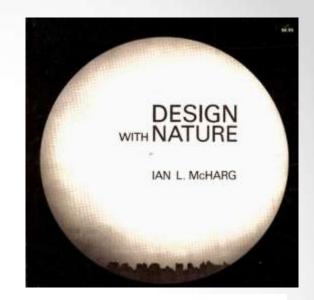
CREATING INFORMED PARTICIPANTS

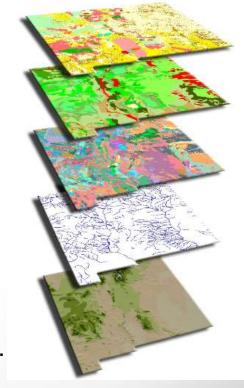
Ian McHarg

From Wikipedia, the free encyclopedia

Ian L. McHarg (20 November 1920 - 5 March 2001) was a Scottish landscape architect and a renowned writer on regional planning using natural systems. He was the founder of the department of landscape architecture at the University of Pennsylvania in the United States. His 1969 book Design with Nature pioneered the concept of ecological planning. It continues to be one of the most widely celebrated books on landscape architecture and landuse planning. In this book, he set forth the basic concepts that were to develop later in Geographic information systems.

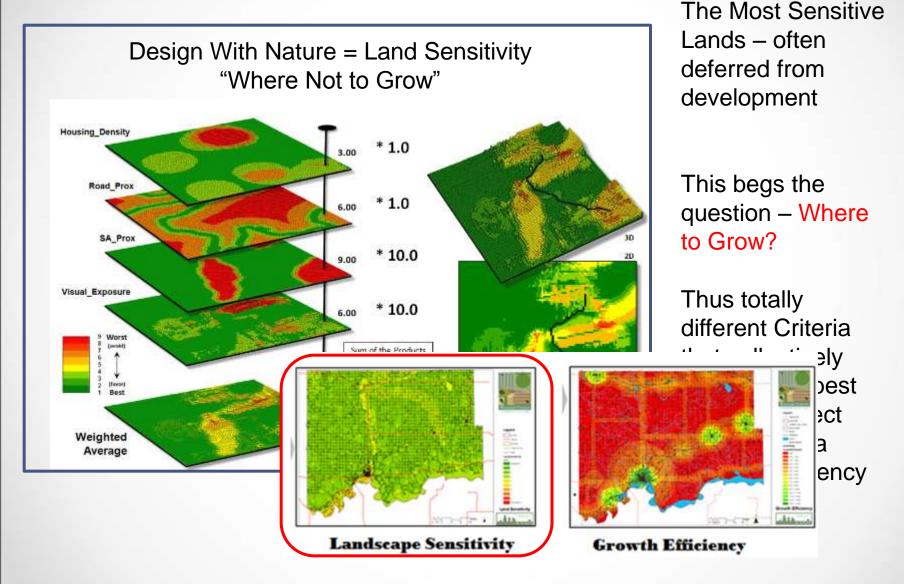






This approach gave planners a tool to use to characterize land use suitability and analyze where highest capacity exists.

Most planners are familiar with the 'Mchargian Process'



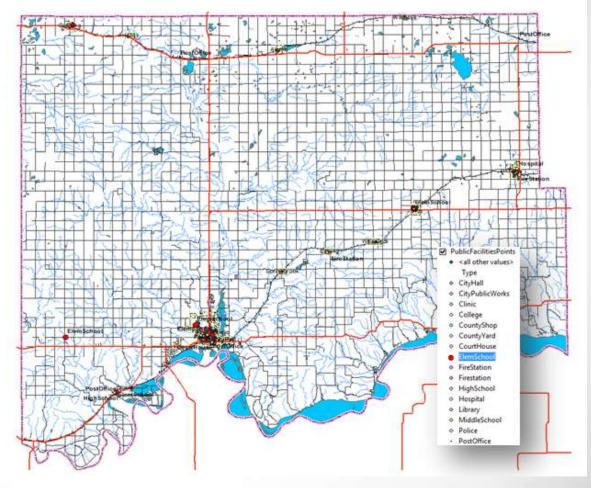
Landscape Sensitivity Map – additive process in GIS

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

Methodology:

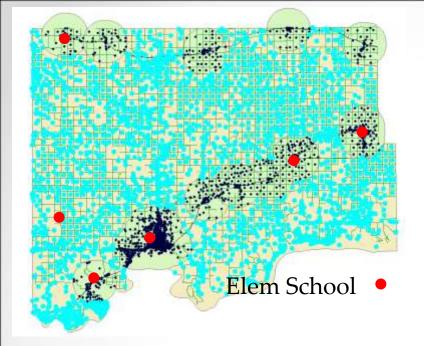
desirable characteristic

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

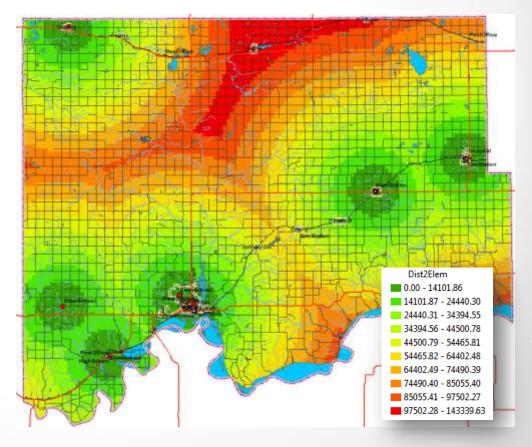




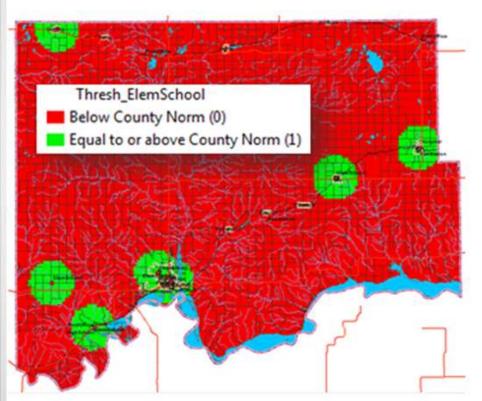
Residential address files – one point for each house

Proximity is Relevant because: 'response time for police & fire' 'walkability for schools & services' 'linear extension of roads, sewer & water'

Indicator	Units	ExistCon
NomDist2Airport	feet	9.21
NormDist2College	feet	9.61
NormDist2ElemSchool	feet	2.60
NormDist2FireStations	feet	2.55
NormDist2HighSchool	feet	3.03
NomDist2Highway	feet	0.97
NormDist2HospClinic	feet	4.23
NormDist2Library	feet	2.93
NormDist2MiddleSchool	feet	3.01
NormDist2PavedRoad	feet	0.33
NormDist2Police	feet	4.71
NormDist2PostOffice	feet	3.80
NormDist2RailRoad	feet	2.25
NormDist2SewerWater	feet	1.33



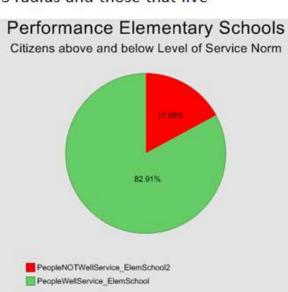
GIS analysis suggests that the average citizen in Williams County is 2.6 miles from an elementary school (see "NormDist2ElemSchool" in the chart, highlighted in yellow) This can be characterized as the County Norm for Elementary School Proximity. The same thing has been completed for all public facilities and services, for example: the average proximity to police/sheriff is 4.7 miles, and that can translate into response time.



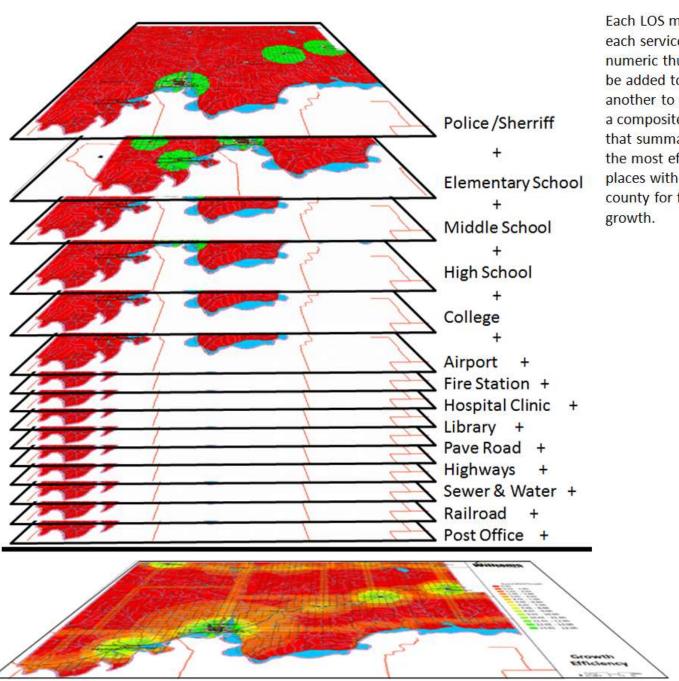
The image on the left shows the 2.6 mile Level of Service Radius around each elementary school and it can be argued that growth that occurs in the red areas diminish citizens existing LOS. We can summarize the number of county citizens that live within the LOS radius and those that live

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

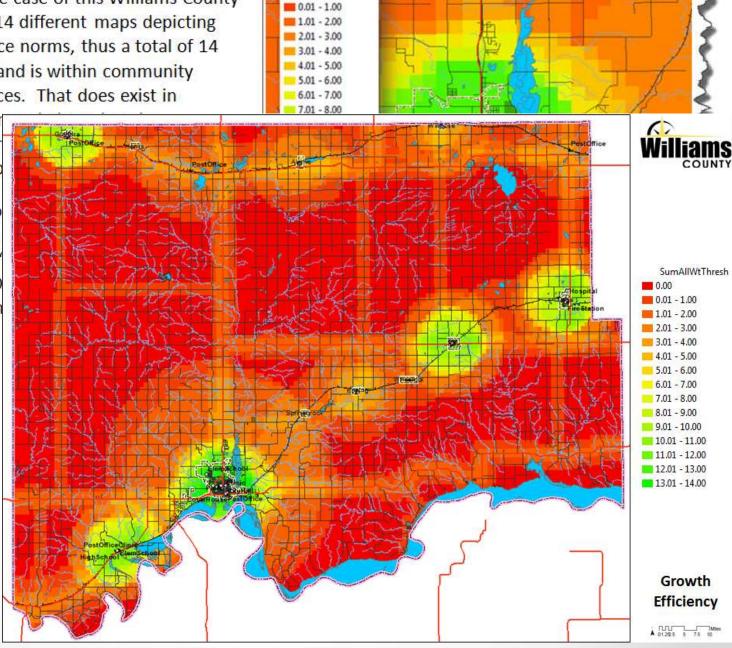


The darker green areas depict where Levels of Service are overlapping. So in the case of this Williams County initial analysis there are 14 different maps depicting the existing level of service norms, thus a total of 14 would indicate that the land is within community norms for all public services. That does exist in

selected parts of Willistor assumption here is all ser (1's) and are of equal imp

A more defensible metho County Residents to rank these elements, such as " Criticial to Good Future D close to Airports is not im

Simple Addition (0-14)



SumAllWtThresh

0.00

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.

1) Sensitive area where impossible of the sensitive area where it is a sensitive area where a sensitive area where a sensitive area where are a sensitive area where a sensitive ar	2) Which of the following factors that affect the effi most important to new development? (5 = Most Im	
illoodplain (lowlands that proceeds, drainages & lake over the common that proceeds are about a repair of the common that proceeds are about a repair of the common that proceeds are about a repair of the common that proceeds are about a repair of the common that proceeds are about a repair of the common that proceeds are a	Proximity to major roads (arterials) In or near public sewer services In or near public water services Quick response for police Quick response for fire services Near existing elementary school Near existing high school Near existing middle school Near highway (quicker emergency response) Near Library Near City Hall Proximity to Recreation Center Near Hospital/Clinic Near Post Office Proximity to Parks Proximity to Trails	S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1 S 4 3 2 1

Do you agree with the following statements?

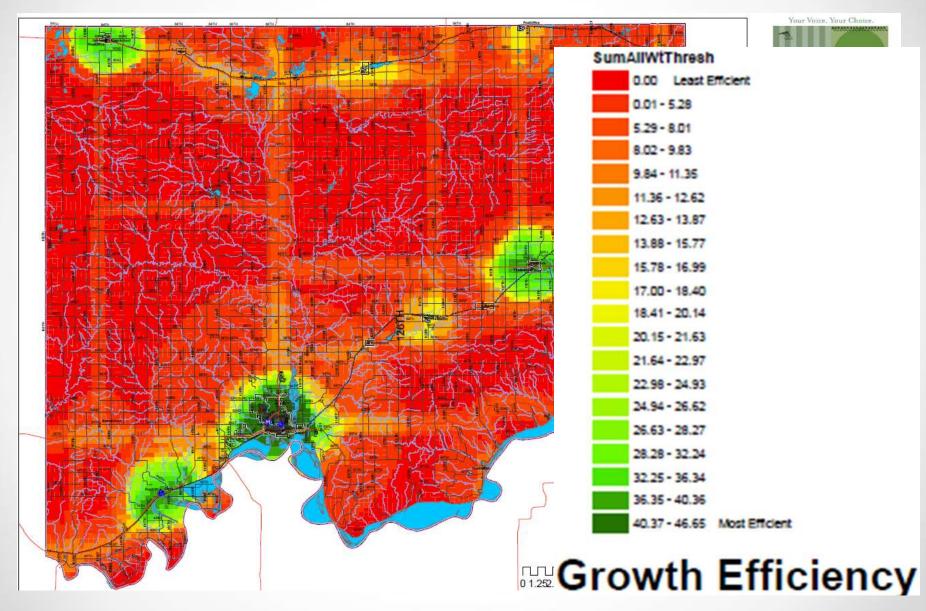
other factors?

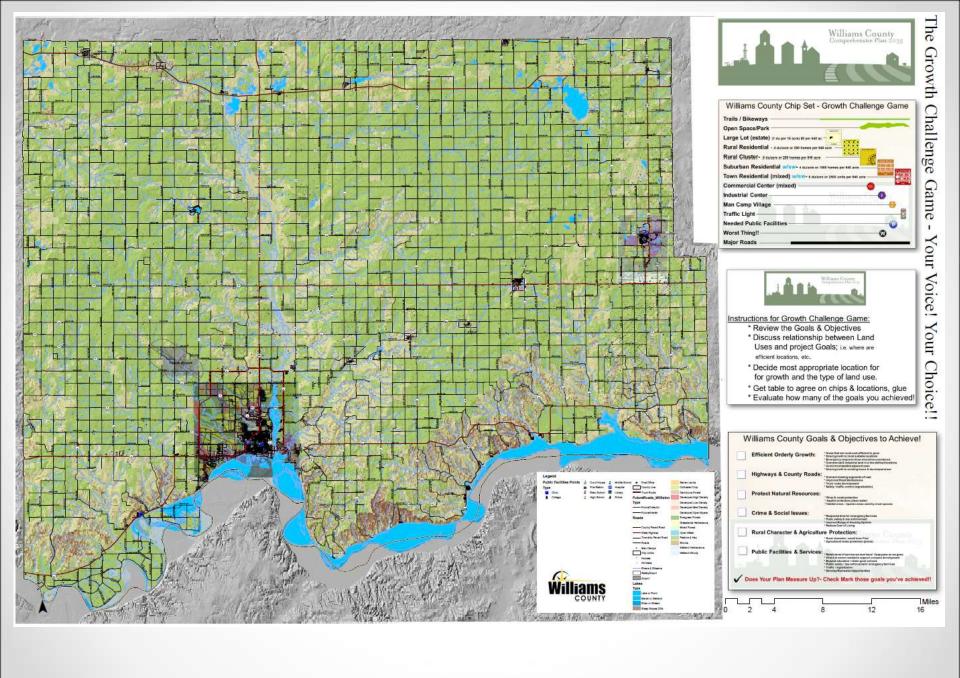
"Future growth in Williams County should pay its own way by providing public facilities and services in a manner that does not degrade the existing levels of service to local residents." (5 = strongly agree, 1 = strongly disagree)

"Future growth in Williams County should be sensitive to the landscape and the desired community character, and we should preclude development that doesn't comply with these objectives." (5 = strongly agree, 1 = strongly disagree)

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.

Growth Efficiency Map







LAND SURVEY FORM:

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 problem, hazard and resource lands) 5 = most important, 1 = least important.

Floodplain (FEMA)	\$	4	3	2	1 3
Creeks, drainages & lakes —	5	4	3	2	1 1
Rare & threatened species (eagle, peregrine etc)	1	4	- 3	2	11
Rare habitat - riparian areas (floodway vegetation)	5	4	3	2	1 1
Critical Winter Range/Migration Corridor (DOW Elk, Bighorn, etc) — [1	4	3	1 2	1 1
Critical Reproduction Areas (DOW)	5	4	3	2	1
Irrigated Agriculture —	1	4	3	2	1 1
Importent Agricultural Soils -	3	4	3	2	11
Hydric & Partially Hydric Soils (shallow to water table)	1	4	3	2	1 1
Steep slopes	5	4	3	2	1 1
Poor septic suitability	1	4	3	2	1 1
Public Lands	1	4	- 1	2	1 1
Poor dwelling suitability	1	4	- 3	1 2	1 1
Oil and Gas Development -	5	4	-2	2	1 1
Wetlands		4	3	-	1 1
Visually Sensitive Areas	1	4	3	3	1 1
Airport Landing Zone —	1	4	3	2	1 1
Geologic Hazards/Subsidence Areas	-	4	3	2	1 1
others?	-		-	-	1 4

 Which of the following factors that affect the efficiency of future growth do you think are most important to new development? (5 = Most Important, 1 = Least Importance):

Proximity to paved roads	- 5	4	3	1 2	1.1
In or near public sewer services		4	3	1 2	1993
In or near public water services	5	4	3	1 2	104
Parks and recreation opportunities near	- 1	4	3	1 2	-4
Quick response for police	500	4	3	1 2	1 1
Quick response for fire services	(1)	4	3	2	1 4
Near existing elementary actioni	1 5	4	3	2	1 4
Near existing high school		4	- 3	1 2	1 1
Near existing middle school	-	4	3	1 2	1 4
Near highway (quicker response)		4	-3	1 2	1004
Near Library,	-	-4	3	1 2	1 4
County Court House/City Hall	-	A	- 9	1 2	1 4
Proximity to Airport	-	4	3	2	11.3
Vear Hospital/Clinic		-	1 3	1 2	1 4
Near Post Office	=	1 4	3	1 3	1 4
Near Major Roads (arterials)	=			1 2	
other factors?	=	-	2	1 2	1 4

3) Do you agree with the following statements?

"Future growth in Garfield County should pay its own way 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)

4) "Future growth in Garfield should be sensitive to the landscape and the existing community character, and we should preclude development that doesn't comply with these objectives."

5 4 3 2 1

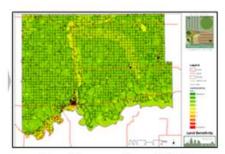
(5 = strongly agree, 1 = strongly disagree)

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:

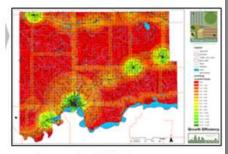
- To protect and guide the development of non-urban areas.
- 2. To secure safety from fire, flood, and other dangers.
- 3. To regulate and restrict the erection, construction, reconstruction, alteration, repair, or use of buildings and structures, the height, number of stories and size of buildings and 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.
- To lessen governmental expenditures.
- 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



Landscape Sensitivity

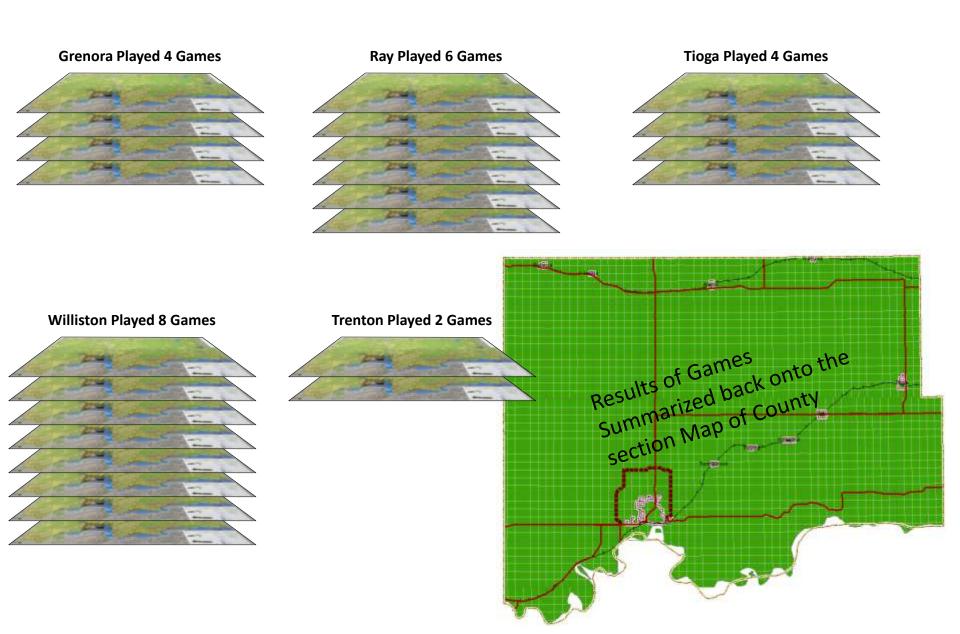


Growth Efficiency

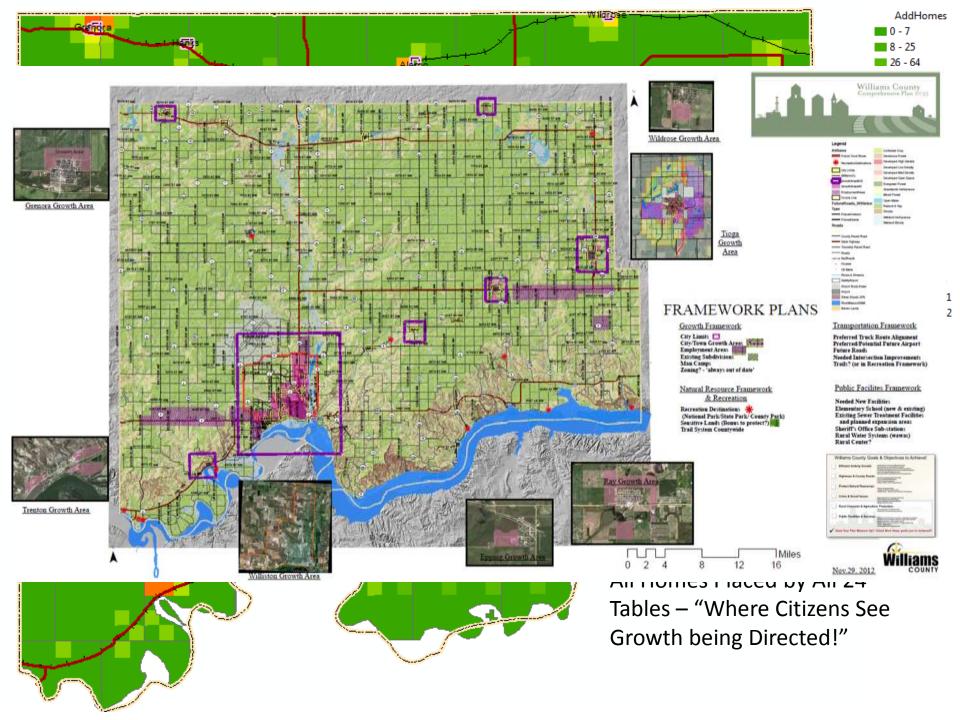
So]
1) V

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.



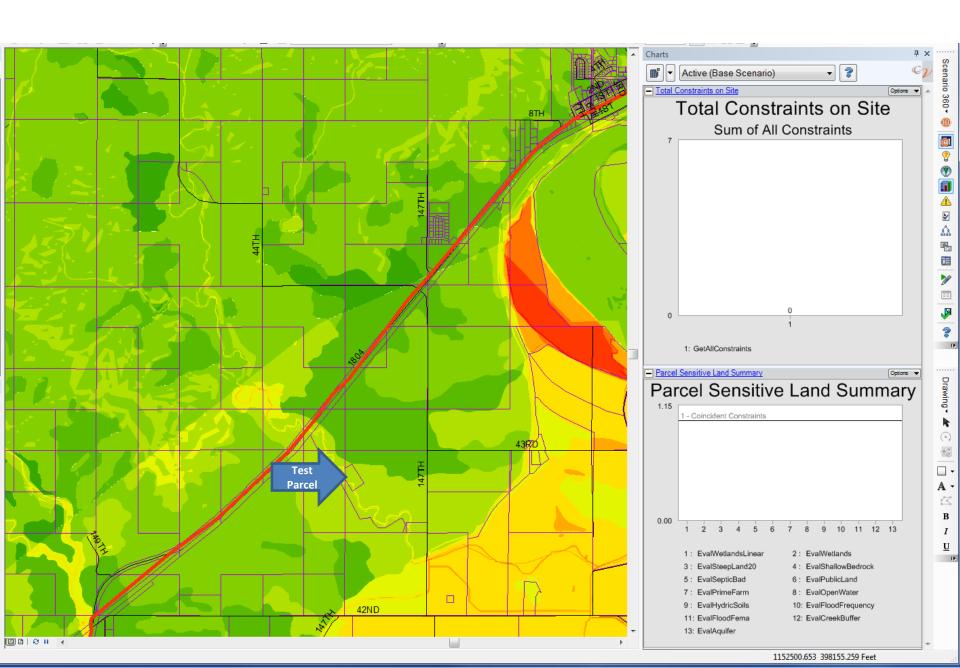
County Wide Citizens Played 24 Games



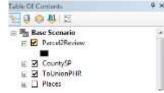
After comp plan is completed:

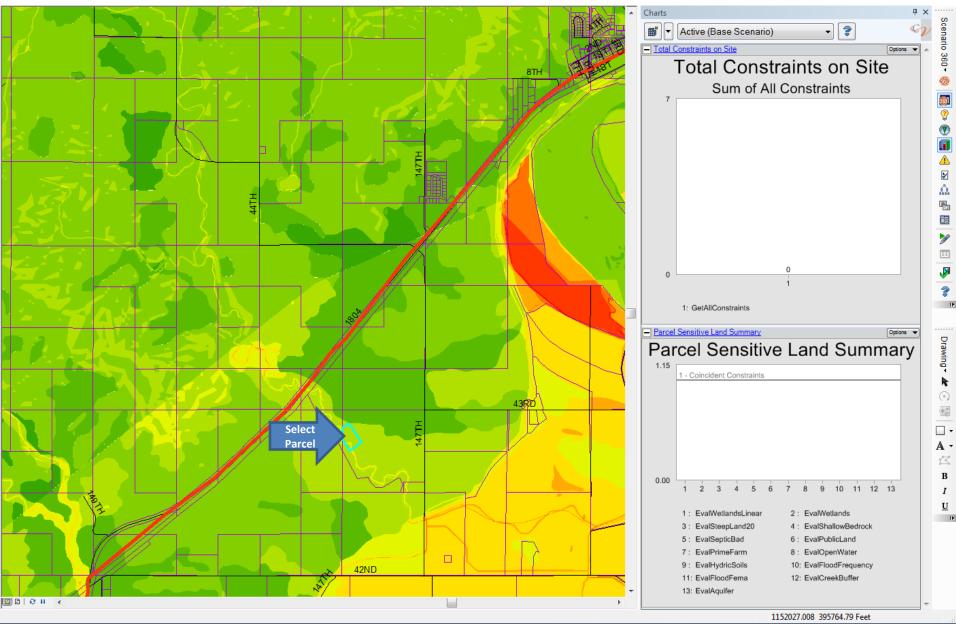
 Growth Efficiency can be used to characterize the potential impacts for any parcel on the fly or those being reviewed by planning & zoning or County Commissioners.

Plans for the Entire County or Individual Parcel can be tested for Land Sensitivity

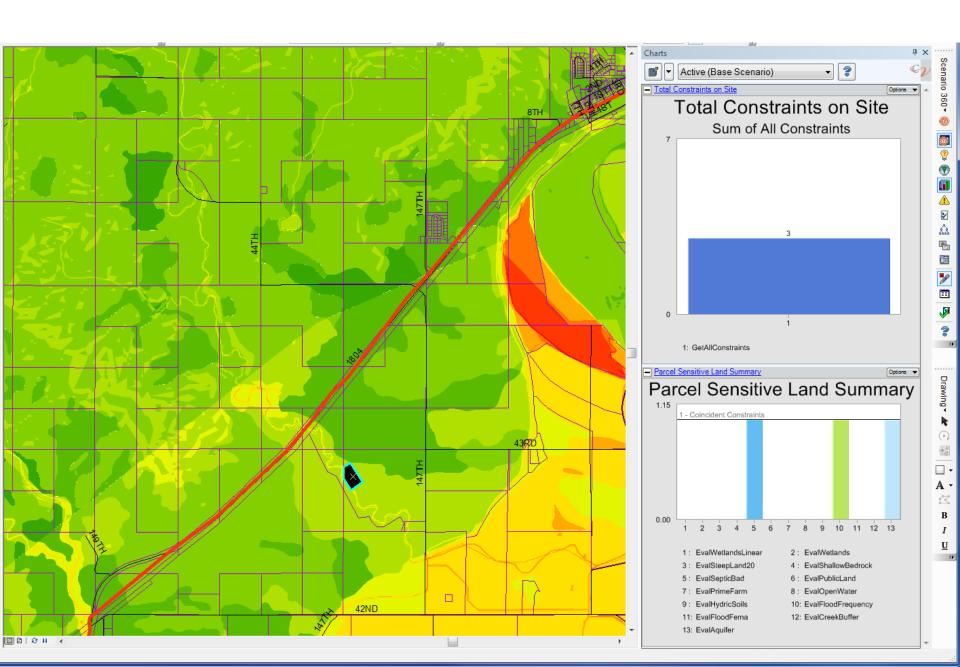


Select a Parcel and 'Copy / Paste' to evaluation Layer....

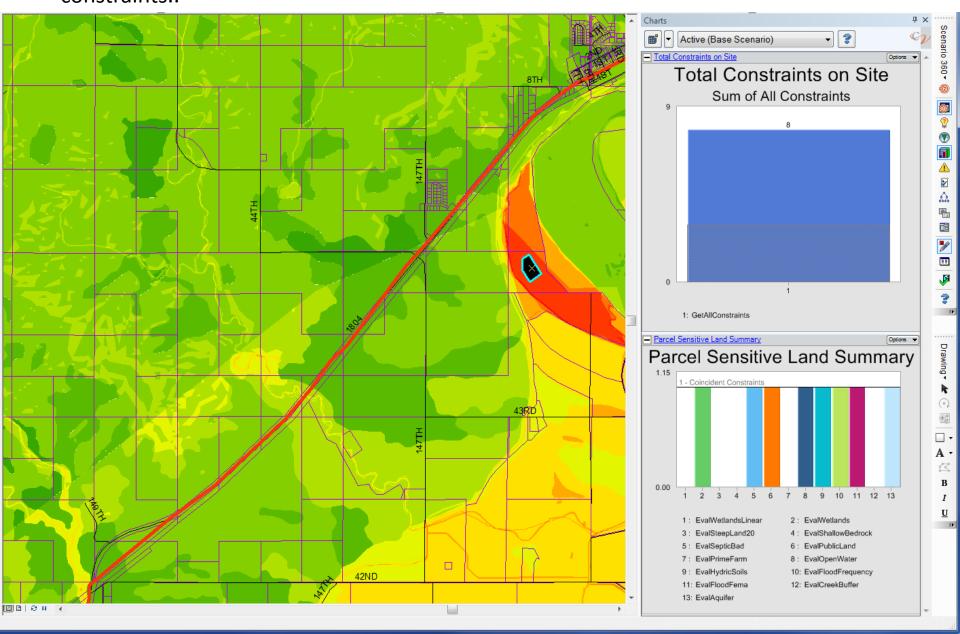




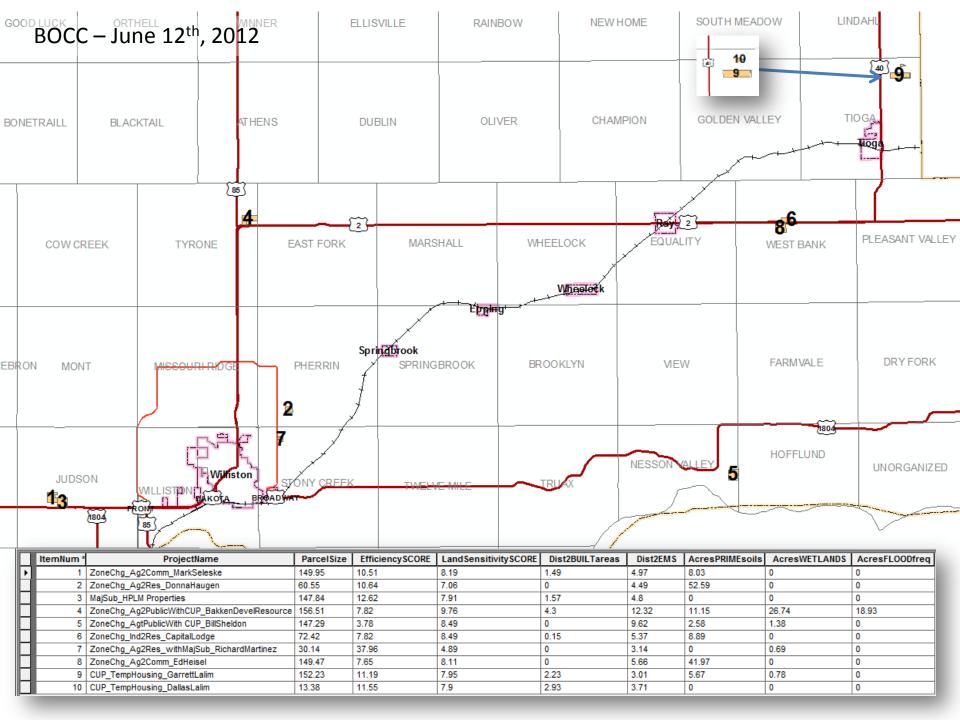
Coincidence with this parcel and the Land Sensitivity map is quantified – 3 constraints..

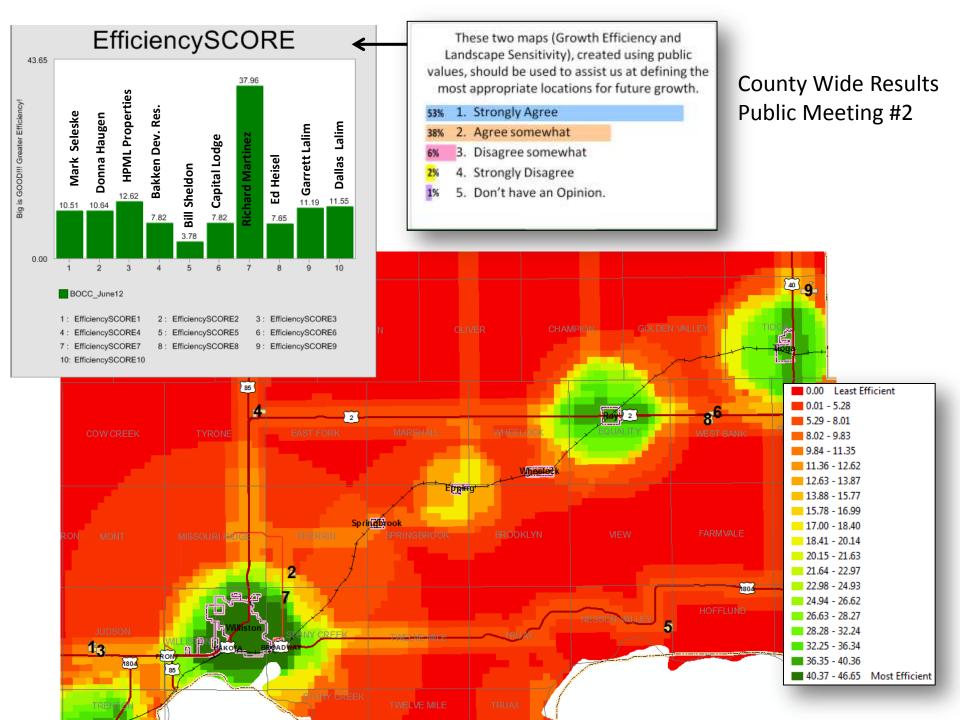


Move the parcel and automatically the analysis is invoked and new results displayed Coincidence with this parcel and the Land Sensitivity map is quantified – 8 total constraints..



 Implementation Tools for incremental decision making (values captured during comp plan)

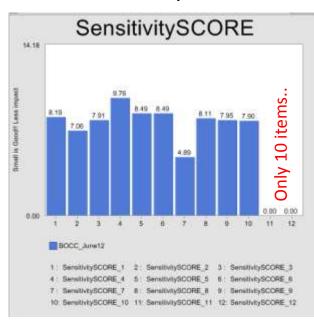


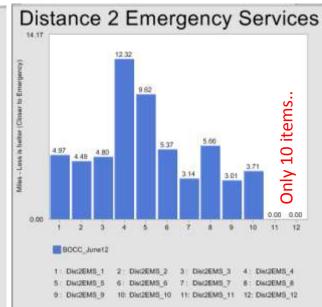


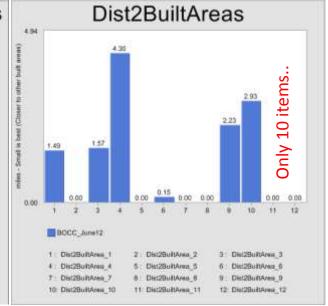
Land Sensitivity:

How far to First Responders:

Adjacent Development Desired:



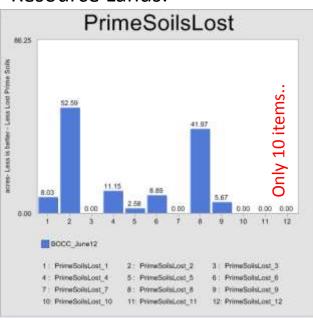


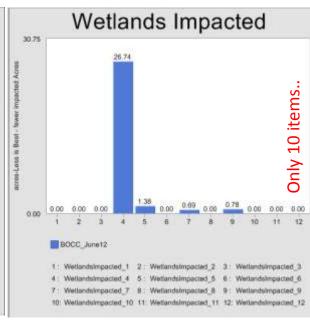


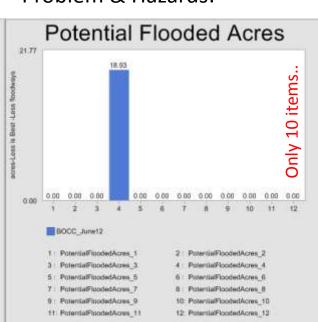
Resource Lands:

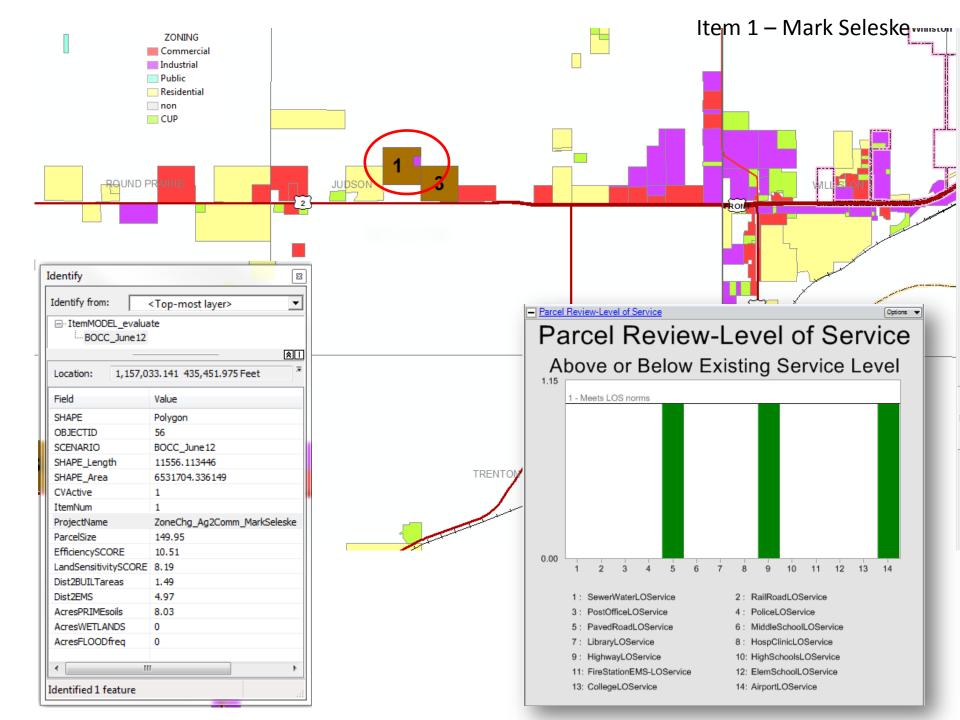
Resource Lands:

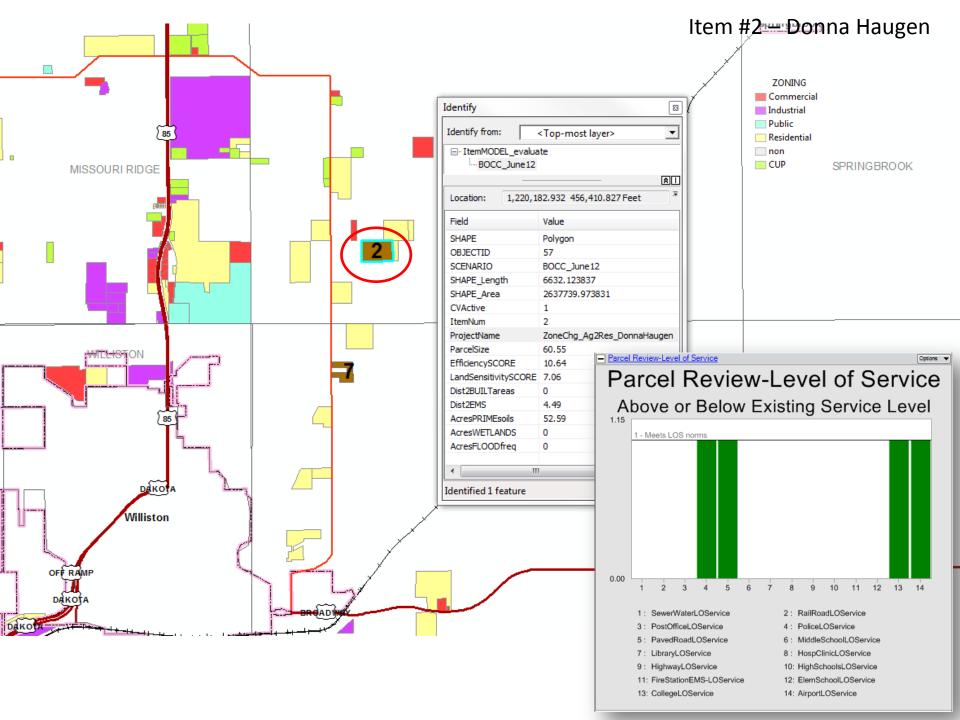
Problem & Hazards:

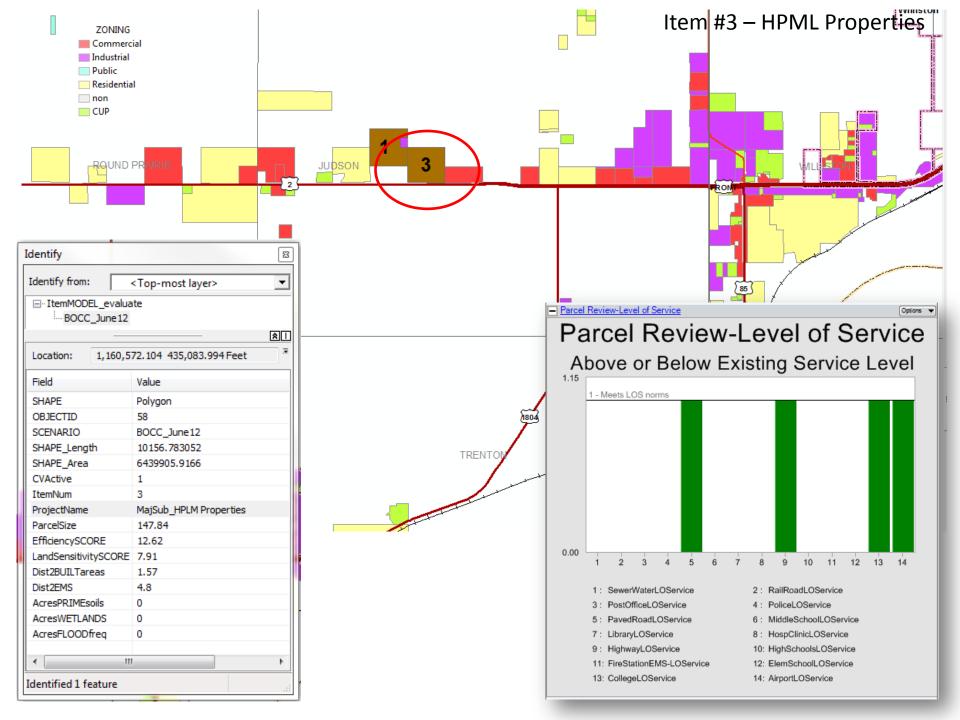


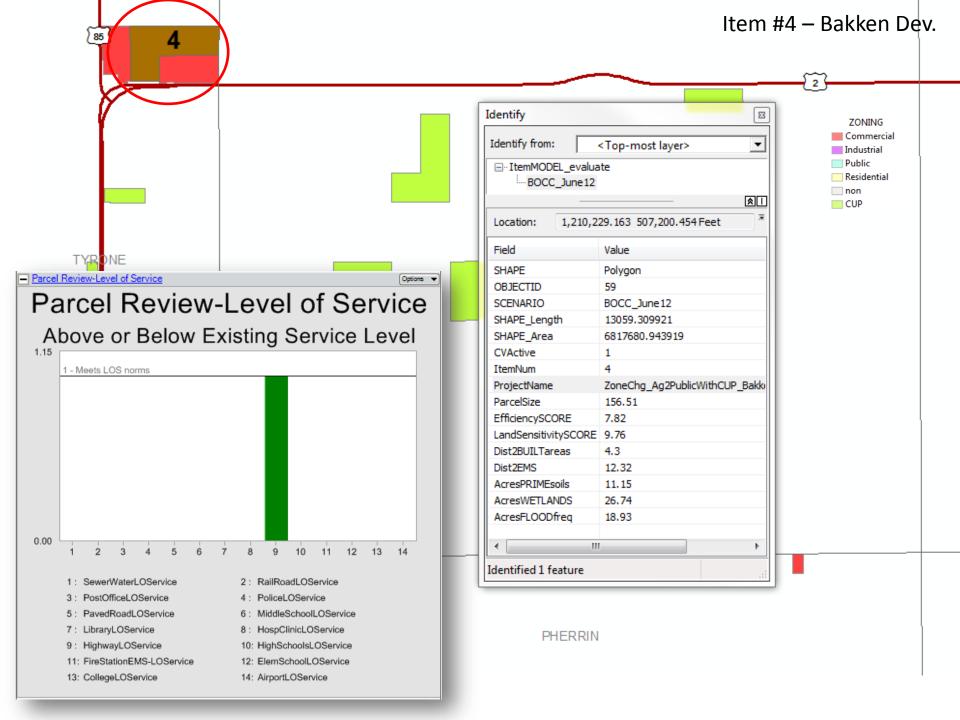


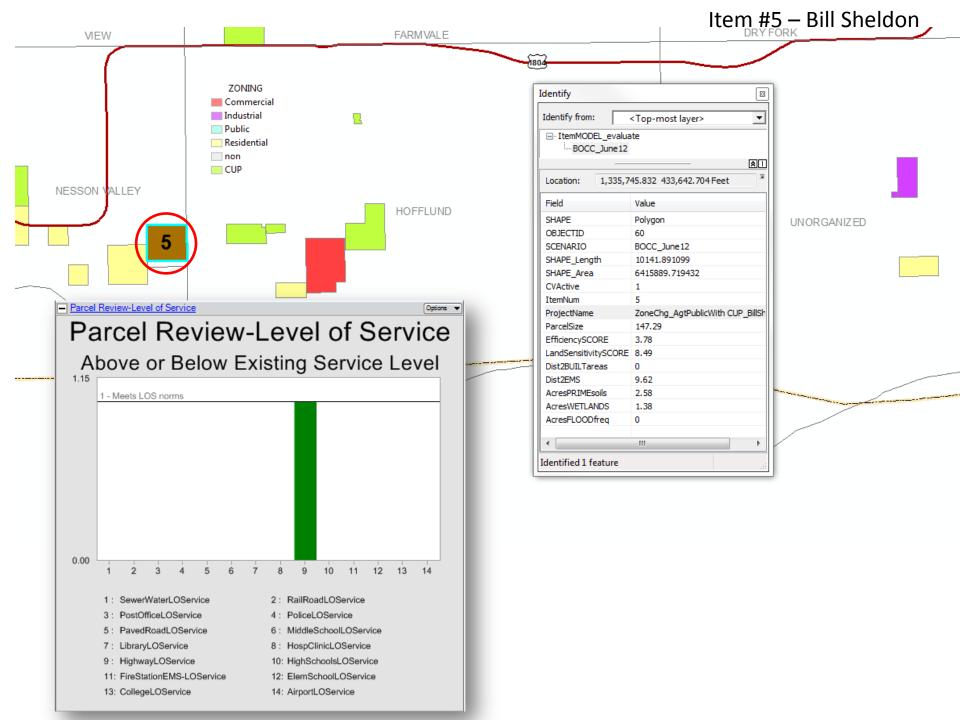


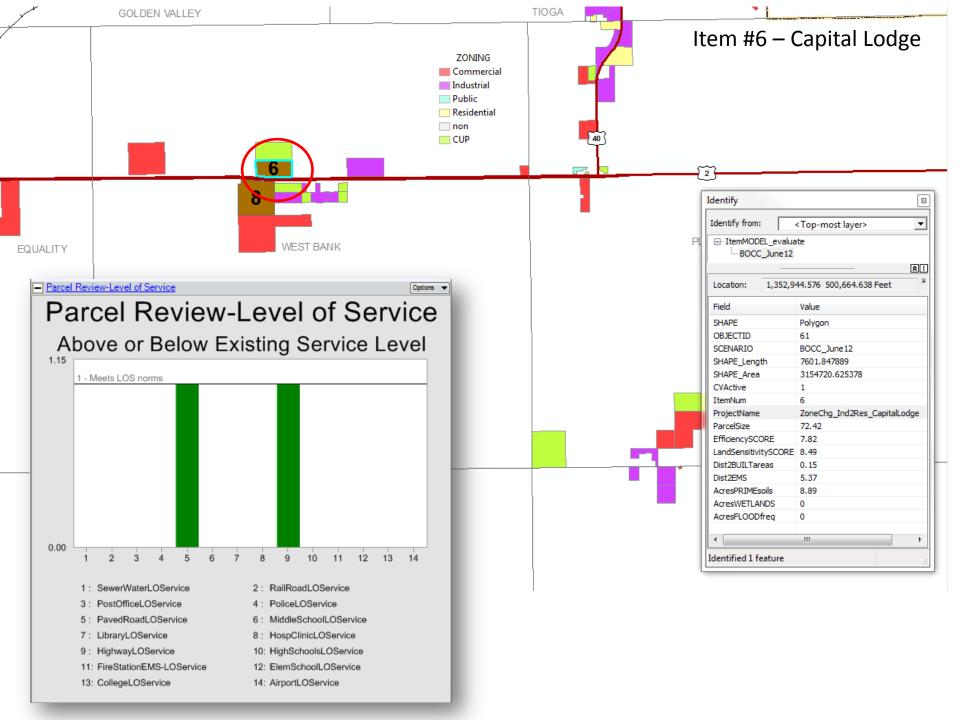


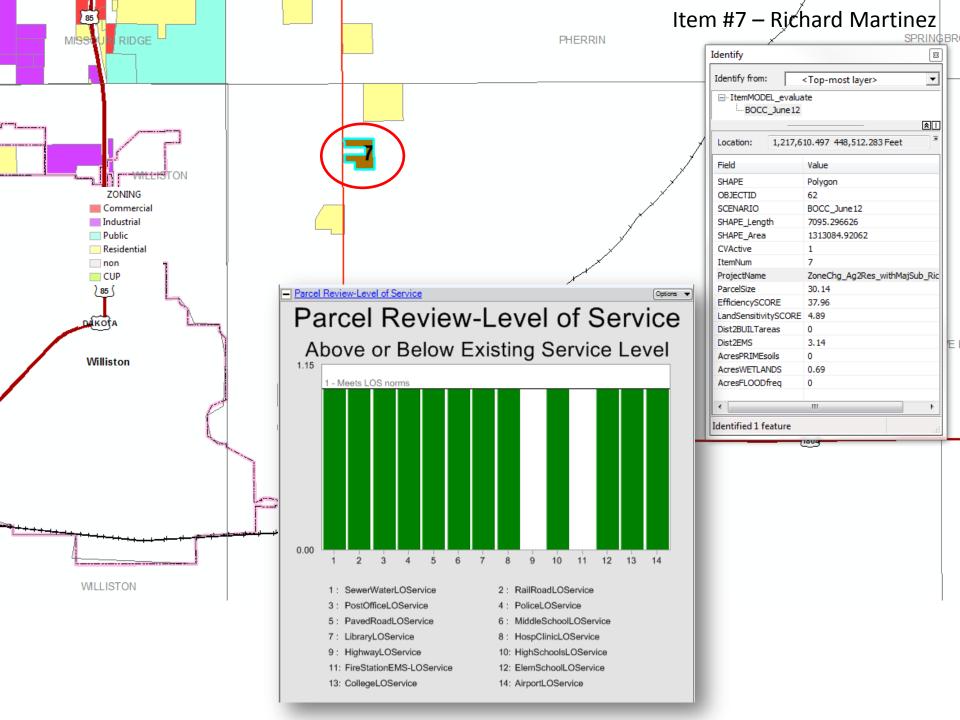




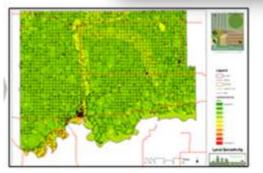


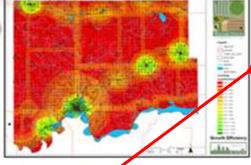






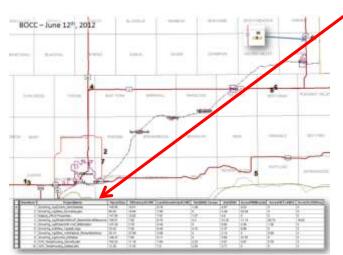




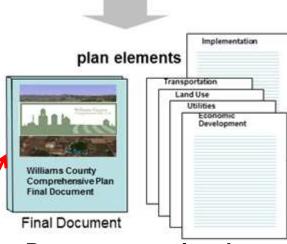


Landscape Sensitivity

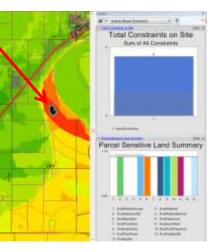
Growth Efficiency



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



Better community plans Higher levels of support!



On the flyparcel specific measurements for decision support. Linked to valid benchmarks.