

## Geog 461 Learning Objective Outline

### LOO 15 Improvement Program Case Studies

15.1 What constitutes a workflow task model for improvement programming-level analysis for housing? Where might GIS be of use in the workflow?

[Nyerges and Jankowski GISDS Chapter 6](#) Section 6.3.1 Affordable Housing Development as Land Use Improvement Programming

Land use programming issues touch on social, economic and environmental conditions across the community. Many urban problems stem from the social, economic and environmental processes intermingling and thereby creating external impacts among the conditions. As a result, there are many different perspectives on growth conditions (growth problems?).

We look at affordable housing as one of the social goals in growth management, but very much a part of land use development. State, local, and public/private housing programs picked up the ball from Fed.'s who have made cuts. Local public/private partnerships are very much alive, using a variety of funding sources, mostly low-income housing tax credits

3 types of affordable housing programs in a growth management context (all popular in King County):

- a) inclusionary housing programs – developers required to incorporate affordable housing units in proposed residential development
- b) linkage – developers of nonresidential buildings required to include some component of residential units in development. The latter idea is the basis of an urban village concept (in central Puget Sound).
- c) streamlining regulations – clarify language of ordinances, coordinate procedures, remove unnecessary duplication

What is Washington State doing about affordable housing? Let us consider this in terms of the potential for GIS workflow by looking at the activities of the Washington State Housing Finance Commission (<http://www.wshfc.org/>). The commission is:

- a quasi-governmental organization to foster affordable housing,
- a publicly-accountable, self-supporting team dedicated to increasing housing access and affordability,
- expands the availability of quality community services for the people of Washington, and
- fosters economic development - all at no cost to the citizens of Washington State.

- The WSHFC is responsible for a low-income affordable, housing tax credit program in Wash State. <http://www.wshfc.org/tax-credits/> Changes year to year, but generally provides various opportunities across the state as needed

- Low-Income, Affordable Housing Tax Credit Program Application  
Specific application program

some geographic areas are favored over others

<http://www.wshfc.org/tax-credits/application/index.htm>

Qualified census tracts in Washington State – see web site exhibit J

<http://www.wshfc.org/tax-credits/application/J-QCTDDA.pdf>

- Low-Income, Affordable Housing Tax Credit Program Qualified Allocation Plan

Selection criteria for various applications – see web site exhibit B

<http://www.wshfc.org/tax-credits/application/B-QAP.pdf>

15.2 What constitutes a workflow task model for improvement programming-level analysis for transportation? Where might GIS be of use in the workflow?

[Nyerges and Jankowski GISDS Chapter 6](#) Section 6.3.2 Transportation Improvement Programming

A Case Study 1999 PSRC TIP process was undertaken to identify where and when GIS was being used. Many people (groups) are involved in the process. To demonstrate that potential we use the same task/subtask ordering as in Table 6.1, but describe where and how GIS could be used (see Table 6.3). Only subtask 1.3 cannot make use of GIS maps in some way, as that task is a “voting/approval” action and there is no spatial aspect to the agenda process. All other tasks/subtasks have a potential application of GIS. The main point here once again is that decision situation information need drives the nature of GIS workflow. Know your information need!

Table 6.3 Potential Contribution of GIS to Transportation Improvement Programming

<b>Task/Subtask</b>	<b>Decision Function(s)</b>
Task 1.1 Create TIP Policy Framework	Discussion of the potential needs for improvement; characterize the deficiencies in transportation system.
Task 1.2 Adopt TIP Policy Framework	Not a spatially-enabled task.
Task 1.3 Approve Funding Allocations	GIS maps depicting a regional funding distribution by City and County
Task 2.1 Create and Approve Regional Evaluation Process	Maps of the objectives to be addressed relative to the existing transportation system conditions. Map the public concerns.
Task 2.2 Project Option Generation	Collect project proposals and geo-reference them to the network.
Task 2.3 Score Projects	Apply the objectives of 2.1 to the projects of 2.2, map the results
Task 2.4 Initial Evaluation	Using multi-criteria evaluation techniques create a ranking of improvement projects. Perform trade-off analysis, exploring various value structures toward prioritizing projects.
Task 3 Review and Recommend Draft Regional Priorities	Spatially review projects on maps, with the broader community. Public participation GIS displays.
Task 4.1 Conformity Analysis	Air quality modeling results depicted in GIS maps.
Task 4.2 Assemble Draft TIP	Bring various scenarios to light, and demonstrate how the preferred is better, considering the spatial characteristics of the transportation system.
Task 5 Public Review and Comment on Draft TIP	Post the maps for review by the public, and collect spatial relevant comments.
Task 6 TPB Recommends TIP Action	TPB puts forward the TIP as a spatially-enabled TIP.
Task 7 Executive Board Takes Final Action choice	PSRC Executive Board takes a final action as presented in the maps.

This enumeration of potential, together with the observation that this process involves a large number of professional groups and the public, provides a reason to suggest that TIP processes might be improved if participatory GIS technology could be developed and evaluated to support such transportation decision processes. See the participatory GIS for transportation experiment at <http://www.letsimprovetransportation.org>.

15.3 What constitutes a workflow task model for improvement programming-level analysis for a water supply? Where might GIS be of use in the workflow?

[Nyerges and Jankowski GISDS Chapter 6](#) Section 6.3.3.1 Water Supply Improvement

Here we have a look at the water system plan in terms of the short-term capital improvement program in relation the long-term capital facilities plan. The SPU web site provides a section by section presentation of the plan. The most recent water system plan is presented [here](#). The most recent capital improvement program is presented [here](#).

#### Project Identification and Prioritization

Commonly, SPU staff take part in a department-wide (across all sub-units) effort to identify new CIP projects as well as changes and adjustments to previously identified projects. Meetings to facilitate this process are held with groups of SPU staff whose work is related to the following categories of projects:

- Conservation
- Dams
- Distribution system water mains and hydrants
- Habitat restoration, habitat conservation plan implementation, Fisheries, and Endangered Species Act compliance
- Information technologies, including SCADA and customer service improvements
- Intermittent supplies
- Metering and service connections
- New supply
- Neighborhood planning and other agency relocations
- Operations facilities
- Pump stations, including new pump stations as well as pump station rehabilitation
- Reservoirs
- Seismic upgrades
- Tanks and standpipes
- Transmission pipelines
- Water quality
- Watershed facilities
- Others as well

Each group created and prioritized a detailed list of new and previously identified projects. SPU's general goals used in identifying and prioritizing new projects were:

- Regulatory compliance and public health protection
- Environmental stewardship
- Customer service
- Infrastructure maintenance needs
- Strategic technology implementation
- Neighborhood benefits
- Meeting growing demand

Whenever possible, various project alternatives were considered and the apparent most cost-effective approach (based on need, risk, cost, and benefit) was included on the list. The group lists were then merged into a single list and compared with projected funding availability based on estimated rate increases. With only high priority projects included in any given six-year budget, the proposed CIP

exceeds the funding levels available, so there is the potential for the proposed CIP to be scaled back during the budget adoption process.

#### Capital Improvement Program Categories and Projects

The proposed CIP and projected CFP have in the past been organized broadly into five categories.

- 1) Water Infrastructure
- 2) Water Quality
- 3) Water Supply and Conservation
- 4) Other Agency Projects
- 5) Technology

15.4 What constitutes a workflow task model for improvement programming-level analysis for water drainage? Where might GIS be of use in the workflow?

[Nyerges and Jankowski GISDS Chapter 6](#) Section 6.3.3.2 Drainage Improvement

The following link provides access to the City of Seattle Comprehensive Drainage Plan. Within that plan is chapter 9 “Project and Program Implementation” (see p. 9-1 which is page 293 of pdf). The chapter describes how the drainage plan identifies projects that are to be considered in program implementation. A financial program is the basis of the six-year capital improvement program.

[http://www.seattle.gov/util/stellent/groups/public/@spu/@usm/documents/webcontent/cos\\_004806.pdf](http://www.seattle.gov/util/stellent/groups/public/@spu/@usm/documents/webcontent/cos_004806.pdf)