

FHWA Pricing Workshop: Added Capacity HOT

Planning Best Practices and Lessons Learned

- **Establish goals and objectives and clearly communicate a vision**

Projects must have clear objectives and a vision of how to achieve objectives in order to measure success. Determine the goals of the project and how success will be measured.

- **Take advantage of opportunities**

Several successful projects have been the result of taking advantage of opportunities whether it is underutilized capacity on an HOV lane, new legislation encouraging innovative partnerships or even popularity of an operating strategy.

- **Maintain flexibility**

Decide upfront on priority users, if any and how or what may cause changes in this operating strategy over time. Establishing threshold values will enable operators to easily recognize when a project is not performing as intended. Knowing these threshold values in advance allows operational changes to be more easily implemented. Moreover, incorporating flexibility into the design of the facility may extend the life of the facility because operations can be adjusted as corridor conditions change or community goals change.

- **Engage project partners and encourage agency cooperation**

Successful projects have been the result of cooperative efforts from many agencies. The projects often cross jurisdictional boundaries and may require new institutional arrangements. These agreements should be drafted early in the planning process and should clearly define the roles and responsibilities of all parties. While being clear in responsibilities, the agreements should also contain enough flexibility to provide for unforeseen circumstances. Agency cooperation results in seamlessness to the customer.

Planning Group Exercise

Develop an action plan that identifies the steps necessary in the planning process to support the project.

What are the project goals?

Who are the stakeholders and what are their roles?

What data/analyses are needed?

What are the potential barriers?

Consider the following questions:

- What are the project goals, prioritize if necessary?
- Is project included in long-range plan and TIP? If not, how will this be addressed?
- Who are your project champions? How will they help implementation?
- What institutional arrangements are necessary? Who are the stakeholders and what are their roles? How are the existing relationships?
- Are regional pricing policies already in place?
- What institutional arrangements are currently in place?
- What operational strategies are being considered?
- What is the existing legal authority? Will additional legislative authority be required?
- Is this an interim project or will it be permanent for the foreseeable future?
- How will toll rates be set?
- What will excess revenues, if any, be used for?
- What environmental approvals are required?
- Are there environmental justice concerns? If so, how will they be addressed?
- What are the current/future occupancy requirements?
- Who are the priority users?
- How will operations be adjusted over time?
- How will performance be monitored?

Operations Best Practices and Lessons Learned

- **Develop a Concept of Operations**

A concept of operations should be developed that clearly describes the characteristics of the proposed system. This includes the goals and objectives of the facility, operating parameters, policies and constraints that affect the system, and a clear definition of roles and responsibilities of the operating and maintaining agencies.

- **Establish Operational Policy for the Facility**

The operating agency should set a goal for the free flow traffic speed of the proposed facility. Most existing facilities have a goal of exceeding 45 mph for 90% of the peak period. It should be identified whether the goal is to maximize revenue or mobility for the added capacity on the corridor.

Operating hours and occupancy requirements have to be established for the new facility.

- **Leveraging technology and operational strategies to enhance safety while maximizing mobility along the corridor.**

Identify the existing technologies available to implement the HOT lanes. This includes but is not limited to all traditional roadside ITS devices and tolling systems.

In situations where capacity is added to provide HOT lanes within existing right of way, complementary technologies may be implemented that can supplement design constraints and reduce labor demands.

- **Implement and maintain a stakeholder group to support development, deployment and ongoing operations.**

For many agencies, the deployment of HOT lanes is a new facility type to operate. Oftentimes, new partnerships are formed to implement these HOT lanes. A key item for success is the identification and development of operational requirements for the facility. An active stakeholder group enables maximizing the resources of all partner agencies.

- **Identify any design and legislative impacts that operational goals may affect.**

How the facility operates, regarding user groups and any restrictions of the HOT lanes may influence design decisions, operational considerations and have legislative impacts/constraints.

The tolling strategy, whether to maximize revenue or maximize mobility, influences the design criteria, ingress and egress, toll rate setting, operational goals etc. Decision items that have long lead times should be identified as early as possible.

- **Enforcement strategies**

Enforcement is critical to the success of HOT lanes. In order to maintain mobility within the corridor enforcement areas need to be coordinated with stakeholders and

Operations Group Exercise

Develop an action plan that identifies critical operational issues that need to be addressed to support a successful project.

What are the roles and responsibilities of partner agencies?

How will the facility integrate into existing systems?

What are the appropriate measures of effectiveness and thresholds for performance?

Establish monitoring, maintenance, and incident management processes.

What are the potential operational constraints?

Consider the following questions:

- What are the roles and responsibilities of the partner agencies?
- Who will operate the facility?
- Who will handle the different operational elements?
- How will tolls be collected and transactions processed?
- What are the reporting needs of the facility?
- Who provides the customer service for the facility? Does it depend upon the issue?
- How will access design work with the tolling scheme?
- What are the implications for the network?
- How will the facility be integrated into existing ITS infrastructure?
- How will the facility interface with other components of the regional transportation system?
- How does the toll policy affect operations?
- Who sets the toll rates?
- Who decides when to lift the toll rates if applicable under what scenarios?
- How do the priority user groups affect operations?
- How will operations be monitored?
- Will operations change over time? If so, how?
- How will enforcement be handled?
- Are the enforcement areas in the design of the project?
- When a violation occurs, what will be the fine?
- How will the fine be processed?
- What agency will be responsible for enforcement?
- Who is responsible for incident management on the facility?
- Will performance measures for incident management be defined in operating agreements? If so, what will they be?
- How will incident management be funded?
- What agency will maintain the facility?
- Will the facility have any unique maintenance requirements?
- What will be the policy for clearing shoulders or unused lanes of vehicles – other than as part of incident management?
- Who is responsible for monitoring performance?
- What will trigger an operational change? How will changes be implemented?
- Are there specific operating thresholds that must be maintained per agreements with other agencies?
- What are the consequences of not meeting these thresholds?
- Identify any interoperability concerns (for instance is anyone else in the area/state operating HOT lanes/toll lanes?)
- How are the operations funded?
- Does the signing plan adequately communicate to motorists what the toll rates are, the user restrictions, where to get in, where to get out?
- Are there any operational constraints at the egress points of the HOT lanes as vehicles have to merge back into general use lane operations.

- Are there any legislative requirements to changing the operations of the HOT lanes?
- Are there any legislative requirements to setting the toll rates on the HOT lanes?

Design Best Practices and Lessons Learned

- **Identify user group for the HOT lanes.**

The design of the HOT lanes is directly dependent upon what vehicle types are allowed to utilize the facility. Are trucks allowed? Transit buses? Depending upon the preferred typical section there are design considerations that must be identified before moving forward.

- **Provide safe and efficient design while maximizing the ability to add capacity on an existing facility.**

Adding capacity by providing HOT lanes is generally done in highly congested urban areas on existing corridors. Due to the right of way constraints there is often a need to evaluate design criteria requirements and the ability to provide a cost feasible solution. Lane and shoulder widths, method of separation, access points, and enforcement areas may all be analyzed. A decision matrix should be identified based upon site specific characteristics and influences to assist in developing the final typical section.

Reduction in criteria may be offset or accompanied by complementary operational strategies. Identifying viable alternatives

- **Provide enforcement areas.**

The ability to manage traffic demand is critical to HOT lanes. Occupancy enforcement is currently being provided at the roadside. A successful design should accommodate either declaration lanes or observation locations for law enforcement, until such time as an automated means of detecting occupancy is widely deployed.

- **Communicate to the public at the roadside.**

There are many challenges to communicating with motorists at the roadside especially within an already congested urban area. The signing plan is a critical element as it must accomplish the ability to convey to motorists the cost of the facility, when the facility is open, how to get in the facility, how to get out of the facility, enforcement, incident management information and even how to obtain general information about the facility. A conceptual signing plan developed early in the project and evaluated iteratively as components are refined is critical to a projects success.

Design Group Exercise

Develop an action plan that addresses critical design elements.

Identify user group(s) for the HOT lanes.

What is the preferred typical section?

What are the roles and responsibilities of partner agencies?

What are the data and analyses needs?

Develop a decision matrix for deviation from design criteria.

Identify design related decisions that can impact facility operations.

Consider the following questions:

- How will the new capacity be added?
- What are the right of way constraints?
- Is the project considered an interim improvement?
- How will allowable user groups influence design? (i.e., large trucks)
- What is the desired typical section?
- Is it anticipated that you will have to pursue design variations or exceptions?
- Has a hierarchy been established based upon site specific characteristics to enable design criteria decision making?
- Will any design criteria decisions impact operations (for instance increases road ranger patrols to accommodate narrow shoulders?)
- Have the stakeholders design criteria desires been accommodated to the extent feasible?
- How will the HOT lanes be separated from the general use lanes? Barrier, Buffer, Paint?
- How will ingress and egress to the facility be addressed?
- Has a traffic operational analysis been performed to evaluate proposed ingress/egress locations?
- Grade-separated access points versus slip ramp?
- Is there adequate ROW for enforcement? If not, how will enforcement be provided?
- What messages will need to be conveyed to travelers?
- How will messages be conveyed?
- Has a conceptual signing plan been developed?
- Have operational impacts been considered while developing design?
- Has MOT been evaluated to identify impacts?
- Has the tolling plan/methodology been finalized?
- What ITS infrastructure / components are required to monitor and operate the facility?

Finance Best Practices and Lessons Learned

- **Consider any and all funding and/or financing mechanisms**

Successful projects have cobbled together funding packages. There are no straightforward funding strategies. In many instances, financing has been the result of taking advantage of opportunities.

The required funding varies to a large extent from one project to another. For example, some conversions include not only the installation of toll collection zones and increased enforcement (I-15 in San Diego and I-25 in Denver) but also the addition of capacity to the corridor (conversion from one HOV lane to two HOV lanes per direction in I-95, Miami), restriping the corridor (SR 167 in Seattle and I-394 concurrent section) or changing the separation mechanism (double white lines to flexible pylons in I-95, Miami). If FTA funds were used to help construct the facility specific guidelines must be followed or funds must be repaid.

- **Available assistance through Federal programs**

Public agencies interested in implementing and evaluating HOT lane projects are eligible to apply for grants under the Value Pricing Pilot Program (VPPP). VPPP grants have been essential funding source for some HOT lane projects. However, the grants provided to the different projects varies in amount depending on whether the grant is provided for a) the pre-implementation costs (e.g. VPPP grant of \$925,000 in I-394 covered planning, outreach and education while the total project cost was \$12.9 millions) or b) the project implementation costs (e.g.VPPP grant of \$2.8 million out of \$ 9.9 million project cost in I-25 and \$2 million out of \$17.9 million total project cost of SR 167).

- **Stakeholders**

The Federal grant plays an important role in the funding of the HOT lane development. However, the Federal grant is sometimes a part of the total funding required in which case funding is supplemented by other stakeholders of the project which might involve state DOTs, (e.g. Katy, Houston) transit service providers (e.g. Regional Transit District in I-25, Denver) and toll authorities (HCTRA in Katy, Houston), the gas tax (SR 167 in Seattle) or the private sector (I-394, Minneapolis). In most instances, funding has been cobbled together from several sources. Agreements can be made with the private operators to construct and operate the HOT lane facility and collect the revenues for a certain period of time (SR 91 Express lanes).

- **Revenue Sharing**

The demand for continued funding of a project being implemented in phases also depends on the excess revenue generated by the HOT lane (e.g. I-25 Express Lanes generated revenue exceeding the estimated revenue to cover operations and maintenance; revenue generated in I-394 was half as estimated and I-15 in San Diego generated enough revenue to fund express bus operations).

Finance Group Exercise

Develop a financial plan that will allow for the successful design, construction, operations and maintenance of the facility.

Who owns the lane(s) and right of way (ROW)?

Would having the private sector operate the facility as a PPP prove beneficial? If yes, how so?

What revenues can be expected from toll paying patrons? Who wants a share of those?

What are the ongoing operation and maintenance costs?

Can/should revenues from fines be used to help finance the facility/enforcement?

Consider the following questions:

- How will the project be funded?
- Will financing be required? If so, what financing mechanism will be used?
- If debt will be issued, how will it be repaid?
- How will construction be funded?
- How will operations and maintenance be funded?
- How will enforcement be funded?
- If excess revenues are generated, how will they be used?
- What is the potential users' willingness to pay?
- Are other innovative financing mechanisms able to be considered? (e.g. development impact fees, special assessment districts, etc.)
- How will toll policy be decided?
- How will changes in toll policy affect project financing?
- Is a private developer involved? How does this impact the project's acceptance?
- Can back-office operations be leveraged with other entities?
- What are the origin-destination patterns in the corridor? How will access design affect these?
- What are the travel characteristics of the corridor users?
- What alternative routes are available? Are there plans to add capacity to these options?

Outreach Best Practices and Lessons Learned

- **Identify project champions**

Many projects have benefitted from the support of trusted individuals in the community or state. Project champions, other than the implementing agencies, can lend credibility to the project. Additionally, if enabling legislation is required a project champion that can accomplish this is an indispensable asset.
- **Conduct market research and identify issues**

Market research should be conducted to identify what the issues are that are problematic for the community. This should include research of current HOV and transit users as well as potential users of HOT lanes. This information is crucial to develop materials and messages to educate and inform.
- **Develop clear and concise messages**

The messages that are used to communicate project specifics, including project goals, need to be clear and concise. They must clearly convey what the purpose of the project and the project implementation hopes to achieve.
- **Communicate project goals**

In many communities HOT lanes and pricing are new and complex concepts. The goals that are communicated must resonant with the public. Successful projects clearly articulate the goals of project. The I-15 project in San Diego showed how the project revenues would be used to implement new transit service in the corridor; a service that was desired by the public. Without clearly defining and communicating project goals even potentially successful projects can be killed before implementation because of misunderstanding.
- **Continue from project development through operations**

Projects benefit from continued outreach to the users and general public. It is important to continuously market the project. Market research conducted throughout the life of the project allows agencies to adjust messages as needed to address concerns. The public also needs to be kept aware of how operational changes may occur over the life of a project.
- **Create brand awareness**

In some communities it may be necessary to distinguish a HOT project from other tolling projects in the area. A different brand may be used for this purpose. If this is not the cause, it is still useful to promote project awareness.

Outreach Group Exercise

Develop a communication/marketing plan that will support project implementation and operation.

What are sequential steps in the outreach plan?

Who are the stakeholders?

What are the most appropriate communication methods? Will they vary throughout the corridor? If yes, how so?

What messages need to be communicated?

Who are the appropriate messenger(s)?

Consider the following questions:

- What are the area demographics?
- Are there currently operating HOV lanes in the area? What is the public's acceptance of them?
- Are there currently operating toll roads in the area? What is the public's acceptance of them?
- How does the public feel about current toll rates?
- How does the public feel about the level of service on the toll roads?
- What is the toll tag penetration rate?
- What is the public's trust level with the agency implementing the project?
- How will the public react to a private developer implementing the project?
- Will there be confusion over which agency is implementing and/or operating the project?
- Has there been previous media attention on pricing/transportation funding?
- What are the equity issues associated with the project? If any, how will they be addressed?
- Are there project champions? How can the project champions be used to garner support for the project?
- Is there known opposition to the project? If so, what are the issues and how might they be addressed?
- How will the project be marketed?
- Will marketing continue throughout operation of the project?