

**Shared Resources: Sharing Right-of-Way
for Telecommunications
Guidance on Legal and Institutional Issues**



for Federal Highway Administration

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PREFACE

Fiber-optic communications technology offers benefits for government agencies that want to set up communications networks for intelligent transportation systems (ITS). One way to do this efficiently is to offer the public resource of highway *right-of-way* (ROW) in exchange for private telecommunications expertise and capacity. Public agencies may also benefit from arrangements in which private telecommunications providers access public ROW in exchange for cash compensation, which can then be directed to public sector transportation, ITS, or other needs. The Federal Highway Administration authorized a study to explore nontechnical issues related to such “shared resource” projects, and to develop and present guidance for those considering this approach.

Shared resource projects are an innovative approach but only one of several ways to provide for public sector needs and, by no means, a universal solution. Before embarking on shared resource arrangement, public agencies must evaluate their telecommunications needs, the several options available to meet those needs (including private sector-supplied services), and then the appropriateness of each option in light of specified needs. This guidance is intended to support those agencies that, after this initial screening process, have determined that shared resource arrangements do indeed offer the best solution. Although shared resource projects can apply to wireless as well as wireline or fiber-optic infrastructure, this guidance focuses only on the issues and options associated with fiber-optic infrastructure in roadway ROW.

The research team identified 20 issues that figure prominently in shared resource arrangements. In this guidance, these are grouped into three sections, corresponding to the three stages of development: determine applicability, determine compensation options, and refine partnership structure.

The demand for shared resource arrangements is market driven, and the window of opportunity for individual projects is limited. This guidance describes each issue and outlines the options available, summarizes advantages and disadvantages of some of the most salient, and describes the stages in development of a shared resource project. For more background and analysis of any issue, see the research project’s final report, *Shared Resources: Sharing the Right-of-Way for Telecommunications*.

IDENTIFICATION– What Is A Shared Resource Project?

A shared resource project has four specific features:

1. Public-private partnering;
2. Private longitudinal access to public roadway ROW;
3. Installation of telecommunications hardware (principally fiber-optic lines) in the ROW by private companies or public sector agencies; and
4. Compensation granted to the ROW owner over and above administrative costs.

Compensation can be set up as barter or in-kind arrangements, in which private parties get access to the ROW for their own use in return for providing telecommunications capacity or services to the public agency; cash arrangements, in which private parties get access to the ROW in return for making a fee or lease payment to the public agency; or a combination of these two.

CASE STUDIES— How Have Other Agencies Done It?

Following are summaries of different approaches to shared resource arrangements in five projects:

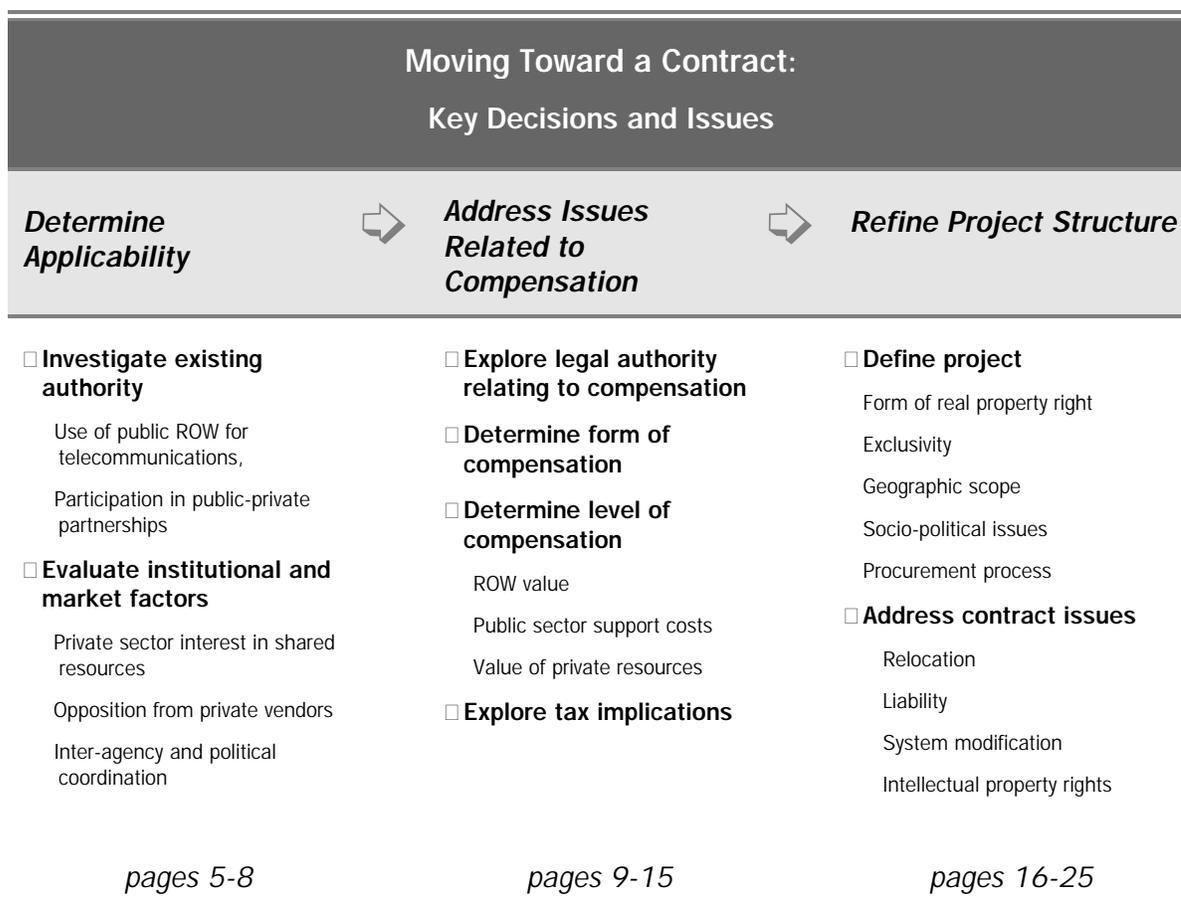
- *State of Maryland:* The Maryland Department of General Services has a shared resource agreement with MCI and Teleport Communications Group for the installation of 75 miles of fiber optics along I-95. Maryland will receive 48 fibers, equipment to “light” 24 fibers, and maintenance services. (“Lighted” fiber is supported by equipment for transmission and receipt of communications signals; “dark” fiber is devoid of supporting equipment.) Each partner will own its fiber, but only MCI will physically access the system.
- *Ohio Turnpike:* The Ohio Turnpike Commission has several unexclusive licensing agreements with private firms for installing telecommunications infrastructure along ROW. The projects vary in location and length covered. In each case, the Commission receives a fixed annual license fee of \$1,600 per mile and rights to use the fiber optics for Turnpike purposes at low or no cost.
- *State of Missouri:* Using standard procurement procedures, the Missouri Highway Administration contracted with Digital Teleport, Inc., to install more than 1,300 miles of a backbone system of six fibers, with associated telecommunications equipment and maintenance, dedicated to Missouri Highway Administration use. In exchange, Digital Teleport gets exclusive access to the same ROW for its own fiber-optic system.

- *Bay Area Rapid Transit:* In the San Francisco Bay Area Rapid Transit (BART) agreement, BART procures a new fiber-optics system supporting its rail operations from MFS Network Technologies and MFS invests funds to install more conduit throughout the system to rent to carriers willing to pull their own fiber. Caltrans is a silent partner because some of BART's ROW in this project is leased from the State. BART gets 91 percent of lease revenues from MFS-owned conduit, MFS retains 9 percent, and Caltrans receives part of BART's revenues as well as the use of four fiber strands.
- *City of Leesburg, Florida:* The City of Leesburg established a communications utility with Knight Enterprises and Alternative Communications Networks (ACN), which will design and construct the network. The City funds and owns the dark fiber on its ROW, part of which will be used for public sector needs. ACN has exclusive rights to lease the remaining capacity to private and public customers, who will own their links to the backbone. The lease revenues go to the City until its capital investment has been repaid; thereafter it will split revenues with its partners. Leesburg may still enter into agreements with other partners for additional infrastructure.

PROCESS— What Steps Must Be Taken?

There are three basic stages in the development of shared resource projects:

1. Applicability— Do legal and political conditions allow shared re-source arrangements?
2. Compensation— What kind of compensation will the public agency receive?
3. Structure— How will the arrangement work?



APPLICABILITY– CAN WE DO IT?

The first step is to determine whether it is feasible for the public agency to enter into a shared resource arrangement offering ROW access for telecommunications capacity or cash lease payments. This involves confirmation of legal authority and consideration of political conditions.

LEGAL AUTHORITY— Is It Possible?

Two statutory issues are involved: authority to allow private entities access to the ROW and authority to enter into public-private partnerships.

Telecommunications in the ROW

The public sector's ability to allow or preclude access to the public ROW for telecommunications is a basic requirement of a shared resource arrangement. The documentation that enables transportation agencies to acquire public ROW may effectively limit the ability to use a highway for a "non-transportation" purpose. Shared resource arrangements cannot be used if state law mandates free access for utilities or if public agencies cannot discriminate among utilities (e.g., allow access for telecommunications but not gas and sewerage).

The traditional USDOT policy on federal-aid highways limited longitudinal utility encroachments. The 1988 revision of that policy requires state accommodation plans to evaluate the desirability of utility installation and ensure that safety is not affected, but many states have not revised their policies. More recently (October 29, 1995), the AASHTO Board of Directors acknowledged the distinction between buried fiber-optic cable and other types of utilities and approved longitudinal use of freeway ROW for fiber under appropriate guidelines.

Can we access ROW for non-highway and non-transportation functions?

Can we grant private firms longitudinal access?

Can we prohibit or restrict private sector access?

*Can we participate
in public-private
partnerships?*

*Are special statutes or
legislation required?*

*Is authority limited to
transportation-only
ventures?*

Public-Private Partnership

Because most shared resource arrangements are a form of public-private partnering, legal authority to enter into such agreements can be a basic requirement. In some cases, “implied authority” is not considered sufficient and specific legislation or “express authority” must be passed.

Although legislation has been enacted in some states and is under investigation in others to allow highway agencies to develop extensive partnerships, most such authorizations are limited to demonstration projects, where they exist at all. Moreover, safety in highway ROW remains a significant concern.

In some cases, where there are no constraints to the contrary, barter arrangements can be set up as procurements rather than partnerships. That is, the public agency “procures” the telecommunications infrastructure and equipment, paying for it with leased access to the ROW.

INSTITUTIONAL FACTORS— Is the Environment Conducive?

The public agency must consider the magnitude of private sector interest, political opposition, and inter-agency coordination in determining whether conditions are right for a shared resource arrangement.

Private Sector Interest

A shared resource arrangement depends on private sector interest in expanding the telecommunications infrastructure. The obvious benefit to the private partner is access to continuous ROW negotiated with a single or only a few contractual arrangements—rather than a laborious assembly of smaller parcels of private ROW—perhaps even at a lower “cost.”

Private sector interest is market driven. Reluctance to enter into partnerships with public agencies may stem from insufficient demand for increased capacity (since many communications firms have already installed their backbone systems), cost factors such as more stringent installation specifications along roadway ROW (e.g., deeper trenches), and the administrative or managerial burden of compliance (related to public sector contractual requirements and in-kind compensation).

Political Opposition

Private companies may resist the establishment of public sector bypass networks (the result of in-kind shared resources arrangements) that they perceive as competing with the services they offer. Opposition may be slight when the bypass system is limited to transportation needs but will be substantially stronger if the system supplies a greater range of public sector communications needs, such as educational system and medical center communications. If the public sector builds excess capacity in its bypass network, commercial lease or sale of that excess capacity may be viewed by private firms as inappropriate competition from an unregulated public utility. Since larger bypass networks and sale of excess capacity on public networks are fundamentally setting the public sector up as a competitor to private industry, USDOT discourages such practices.

Political opposition may also be generated when some private companies gain access to the ROW but others do not, or if terms differ among competing telecommunications partners. That is, if roadway ROW access is granted on an exclusive basis to a single private company, others may object that this confers an unfair competitive advantage even when compensation is involved. Political opposition might also materialize if public utilities are allowed no-fee access but other telecommunications providers gaining access to the right-of-way must pay compensation in kind or with cash.

Are the benefits for private firms sufficient to overcome any disincentives?

Will private firms oppose our self-supply of ITS or bypass networks?

Will our sale/lease of excess capacity be considered “unfair competition” by private providers?

Are there political or administrative constraints on coordinating different jurisdictions?

Inter-Agency and Political Coordination

To make the project attractive to the private sector, the public agency may need to coordinate agreements between neighboring political jurisdictions to ensure continuity of fiber into geographically contiguous areas. Individual cities within a large urban area may be unable to develop ITS projects or large shared resource efforts on their own, when the private partners want projects that cover the entire metropolis. Palo Alto cites this obstacle as the major reason that its shared resource effort focuses on city services and not ITS.

Additional problems may arise in coordinating efforts among different agencies in the same political jurisdiction. Involving multiple agencies creates fertile ground for political conflict, project delays, inconsistent regulations, and burdensome administrative requirements but may also provide opportunities for overcoming barriers faced by individual parties.

COMPENSATION– WHAT KIND AND HOW MUCH?

The second step in developing a shared resource arrangement is to determine the type and amount of compensation to be given to the public agency by the private partner. Three issues are involved: public agency authority to receive compensation, form of compensation, and valuation of access to the ROW.

AUTHORITY– Can We Receive And Earmark Compensation?

If the public sector cannot charge for longitudinal access to its ROW over and above administrative costs, it cannot receive cash payments; however, it may be free to engage in barter arrangements, particularly those structured as procurements. In general, state departments of transportation (DOTs) have less flexibility in dealing with cash flows; municipalities and authorities such as turnpike and transit agencies have greater flexibility.

If compensation (cash or in-kind services) cannot be earmarked for specific uses such as ITS or other transportation needs, DOTs may not want the responsibilities and risks of permitting access. On the other side of the coin, if non-transportation needs are the primary impetus for air-rights partnering, restrictions on allocation of such compensation may diminish states' interest in undertaking such partnerships— e.g., restriction of cash revenues to Title 23-eligible projects, or limitation of in-kind compensation to transportation needs.

Where highway ROW is acquired with federal-aid money, federal funds must be repaid if the ROW is transferred for non-public purposes. Thus, shared resource projects involve granting a lease or license rather than transferring property interests. A state highway department may also permit the use of highway air space for non-highway purposes, so long as it is not required for highway uses within the foreseeable future. Although subject to FHWA approval, cash revenues generated by such air space leasing are exempt from federal funds credit requirements.

*Can we be compensated for access over and above administrative costs?
If so, can we earmark these revenues for transportation or other designated uses?*

What is the best form of compensation— cash, barter, or some combination?

TYPES OF COMPENSATION— What Form Is Best for Us?

Compensation to the public sector may be in the form of goods (in-kind), cash, or combinations of both. More specifically, compensation can be in the following forms:

Barter:

- Fiber-optic conduit, strands
- Towers/poles, antennas
- Electronic equipment, software
- Operations, maintenance
- Upgrading

Cash:

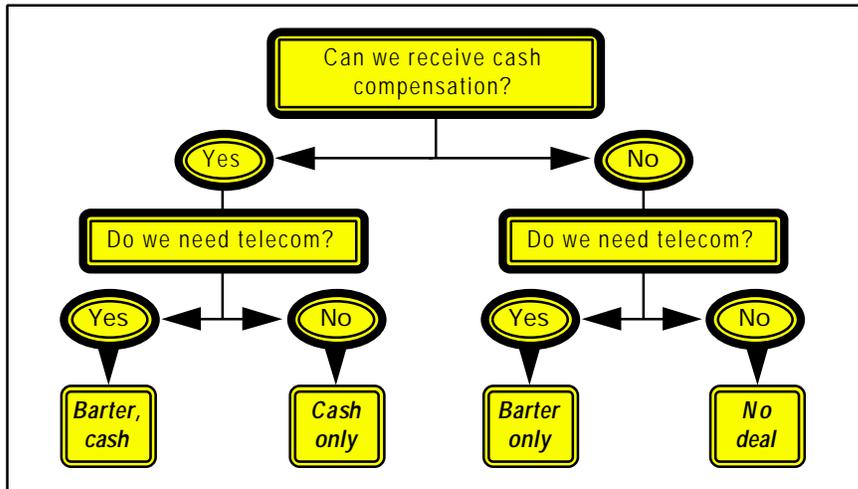
- Lump sum payment
- Annual lease/franchise fee
- Percentage of sub-lease revenues

Cash is flexible and liquid— that is, it can be channeled to a variety of uses and it can be “banked” for future needs; however, revenue allocation may be restricted by law. For example, cash compensation may go directly into the general budget, or it may be used to offset future transportation budgets. Moreover, on federal-aid highways, the federal share of cash revenues from air rights leasing must be allocated to Title 23-eligible projects.

Barter may convey more value to the recipient than it costs the provider (the “win-win” gap), thus benefiting both partners; but barter is advantageous only to the degree that the ROW owner needs such infrastructure. In-kind compensation may also limit the value received to a particular need today, instead of future needs, if the arrangement does not specifically consider the broad range of possibilities that may come with technological advances. Moreover, the type of consideration required may effectively limit the number of private entities able to take advantage of public ROW. A more general disadvantage of in-kind compensation is the chance of settling for less than the private partner would be willing to pay.

Some public agencies have garnered more by combining cash and needs-based compensation. One method is to base cash compensation on a proportion of revenue received by the private partner; such an agreement assures the public partner of compensation above in-kind needs yet accommodates private partners averse to fixed cash commitments unrelated to success. Private partners, however, may resist sharing revenue with the ROW owner unless that agency shoulders some financial risk.

Aside from statutory limitations on cash arrangements, one of the strongest arguments in favor of in-kind compensation is timing. Barter arrangements may be set up more rapidly and, when the window of opportunity is limited, speed can make the difference between a deal and no deal.



What is the best way to determine the monetary value of access?

How do we determine what is fair compensation in specific cases?

LEVEL OF COMPENSATION— How Do We Estimate It?

Estimates of appropriate levels of compensation should be based on valuation of access to the public right of way, consideration of support costs, and valuation of the resource provided by the private partner.

ROW Value

Before establishing a shared resource arrangement, the public sector must have some idea of the value of access to the ROW for the placement of private communications infrastructure. The *Final Report* presents some empirical evidence on compensation for ROW access and explores several approaches to valuation, including competitive auction, valuation of adjacent land, cost of next best alternative, needs-based compensation, historical experience, and market research.

Defining the value of access means taking into account the costs of installing the infrastructure, particularly differences among alternative ROW, and variations in context and the monetized value of any perceived advantages or disadvantages of highway ROW over the next best alternative. Timing is an implicit yet important factor because demand for ROW of any kind strengthens or weakens as market situations shift, competition changes, and technology advances.

Factors	Effect on Value
Geographic	
<input type="checkbox"/> Urban, suburban, or rural location	Affect installation costs, risks to public safety, and infrastructure security; value per mile influenced by number of negotiations required for given ROW length.
<input type="checkbox"/> Section of country	
<input type="checkbox"/> Type of terrain	
<input type="checkbox"/> Location within ROW	
<input type="checkbox"/> Length of ROW	
Contractual	
<input type="checkbox"/> Allocation of financial responsibility for unplanned events	Risk assumed by private partner affects potential costs of a particular ROW and thus value of access vis à vis other options.
<input type="checkbox"/> Risk of damage and relocation	
<input type="checkbox"/> Term of contract	
Technical	
<input type="checkbox"/> Connectivity to a viable distribution network	Indicates maintenance needs and thus safety risk or traffic disruption potential; determines telecom volume and profitability; can be proxy for revenue potential.
<input type="checkbox"/> Connectivity to other ROW for system completion	
<input type="checkbox"/> Type of infrastructure	

To drive the best bargain for the public sector, the ROW owner must have a clear idea of the private sector's upper bound before negotiations conclude. In the absence of an established market, in which frequent trading establishes values that are reported openly, there are six viable approaches to valuation; the table describes each approach and its advantages and disadvantages. Aside from competitive auction, which may or may not elicit bids at "full market value," no single approach will yield a completely accurate ROW value.

Competitive Auction: <i>Private access to ROW granted to high bidder(s)</i>			
P	Prompts private firms to reveal willingness to pay without extensive public sector research.	C	Requires real or perceived competition among potential bidders and possibility that low bidders will be turned away; occurs late in project formulation.
R		O	
O		N	
Valuation of Adjacent Land: <i>Proximate real estate values used as guide to highway ROW value</i>			
P	Readily available data from real estate transactions and property tax records.	C	Ignores installation cost differentials for different locations; overlooks financial/administrative benefits of uninterrupted access and single "landlord."
R		O	
O		N	
Cost of Next Best Alternative: <i>Cost of telecom in highway ROW compared with total cost of best alternative (installation plus access and transactions costs using privately held parcels, railroad or utility ROW, designated utility corridors, etc.)</i>			
P	Based on realistic alternatives; considers all cost factors including variations in installation costs, availability	C	Difficult to obtain data on lease costs for private ROW, precise installation costs.
R		O	
O		N	
Needs-Based Compensation: <i>Target level of compensation based on public sector needs (rather than independent estimates of private sector willingness to pay or market value)</i>			
P	Ensures that telecom needs are met; can tell if target too high if no interest or potential lessees respond.	C	Geared to barter arrangements; cannot tell if target too low; overlooks potential for monetary compensation in addition to barter.
R		O	
O		N	
Historical Experience: <i>Data on documented lease arrangements used as guide to ROW value</i>			
P	Evidence of private sector willingness to pay; may be easier than bottom-up cost comparisons.	C	Unless case is comparable (physical, market, and timing factors), data may diverge widely from private sector willingness to pay in situation at hand.
R		O	
O		N	
Market Research: <i>Potential private sector partners contacted to determine interest, partnership conditions, and willingness to pay</i>			
P	May provide information on willingness to pay as well as contract conditions and other factors important to partnership agreement.	C	Can be incomplete or misleading because respondents describe anticipated behavior, and— as potential lessees— have strong incentive to understate willingness to pay.
R		O	
O		N	

How much does the project cost for negotiation, management, and oversight?

What is the best way to assess the value of privately provided infrastructure or services?

Public Sector Support Costs

Shared resource arrangements do not provide “free” goods or a cost-free revenue stream since the public sector must expend funds for administration, coordination, and oversight. These support costs must be incorporated in the estimation of ROW value.

Valuation Of Private Resources

Valuation of the private resources provided in barter arrangements helps the public sector determine whether it is receiving a fair market “price” for its resource. There are four ways to gauge value: public sector avoided cost, out-of-pocket cost to the private partner, market value, or use-value.

TAX IMPLICATIONS— Will Compensation and Financing Jeopardize Our Tax Status?

Federal tax considerations may effectively preclude a public agency from receiving compensation for access to the public ROW in at least two ways:

- The threat of income tax liability
- The threat of losing tax-exempt status for bonds issued to finance the roadway project or the telecommunications infrastructure.

Generally speaking, states and municipalities do not pay federal income tax; however, the U.S. Supreme Court has held that revenue from businesses that depart from usual “governmental functions” is not exempt. Consequently, a DOT may be liable for federal income tax on revenues earned from a shared resource project.

Federal tax laws on issuing tax-exempt municipal obligations may also discourage such projects. Using tax-exempt bond proceeds to benefit profit-making private organizations may jeopardize the tax-exempt status of the bonds issued to finance the existing project. The term “bond” refers to any municipal obligation, including bonds, notes, leases, and certificates of participation. That is, if a private entity will benefit more than a minimal amount from the proceeds of the bonds, and if it will provide security or payments exceeding more than a minimal amount of the debt service, then the bonds may not be tax-exempt. For a discussion of current law and examples of the criteria and tests which determine tax-exempt eligibility, see the *Shared Resource Study Final Report*.

Does our receipt of compensation generate a federal income tax liability?

Do such revenues threaten the tax-exempt status of project bonds?

General Private Activity Test					
<i>Private Business Use Test:</i> are more than 10 percent of bond proceeds* used for private business?	Y	Y/N	Y/N	Y/N	N
<i>Private Security or Payment Test:</i> does private business pay or secure payment of principal or interest on more than 10 percent of bond proceeds?	Y	Y/N	Y/N	N	Y/N
Private Activity or Volume Cap					
Does private portion of bond proceeds exceed \$15 million, or does private sector pay or secure payments on more than \$15 million of bond proceeds?	Y/N	Y	Y/N	N	N
Private Loan Financing Test					
Are more than 5 percent of bond proceeds or more than \$5 million going to be used to make or finance loans to persons other than governmental units?	Y/N	Y/N	Y	N	N
Tax Status of Bond– is bond tax exempt?	No	No	No	Yes	Yes

*This percentage applies when private business use is related to governmental use of the bond proceeds; otherwise, the threshold percentage for these tests is 5 percent.

STRUCTURE— HOW WILL IT WORK?

The third step in developing a shared resource arrangement is to determine the structure of the project. This involves both defining how the project will be set up and considering features that are important to include in the contract.

PROJECT DEFINITION— How Will the Project Be Set Up?

Defining how the project will be set up includes choices related to the form of property right, exclusivity, geographic scope, social issues, and procurement considerations.

Form of Property Right

The form of the right conveyed involves two core issues:

- What public resource is being shared
- How the right of sharing is offered to the private sector

The right may allow access to the ROW itself for privately owned infrastructure or may be limited to access to (or use of) publicly owned infrastructure. The type of public resource shared is directly affected by constraints on public sector authority to use ROW for telecommunications facilities. That is, restrictions on private rights to access public land may preclude private ownership of conduits. The property shared, then, would have to be capacity in public sector telecommunications infrastructure (inner ducts or fiber in a publicly owned conduit, space on a public tower) rather than the ROW itself.

Additional factors may influence the type of public resource. For example, an agency may prefer to own all conduits or towers in the ROW in order to better control allocation of capacity over time as needs change, as well as maintenance activities. On the other hand, the public agency may prefer the private party to own the infrastructure and thus be responsible for maintenance. Retaining ownership of all of the infrastructure in the ROW will probably require the public agency to bear some of the construction costs, expenses which it may prefer to avoid. Leasing space may be construed as a business enterprise putting the public agency in the position of an unregulated public utility—a position most public agencies would be well-advised to avoid.

What is the resource—the ROW itself or access to it?

Under which format can private partners access public ROW or public property in it?

Who will own and maintain the facilities?

Private access to public ROW for own infrastructure

P	Private sector responsible for infrastructure	C	Public sector must control timing and coordi-
R	design, construction, funding.	O	nate private partners.
O		N	

Private access to public infrastructure, not ROW

P	Public flexibility in response to market	C	May entail greater administrative responsi-
R	conditions, own needs.	O	bilities; higher financial involvement.
O		N	

The form in which public resources are shared with the private sector is also governed by any constraints on the public agency's authority to grant access to the ROW for telecommunications. Access can be granted under a variety of legal forms, which vary in permanence and the extent of rights granted:

- Easement*: a property interest in land owned by another. The types of uses allowed vary by state but, traditionally, easements are limited to certain uses including ROW.
- Lease*: an agreement that grants rights to use property for a specific time period. Forms of lease payment include fixed-price, percentage, and graduated based on an independent index.
- Franchise*: a privilege granted to engage in defined business practices. Typically, a franchise is a business privilege and not a real property right although, where land is involved, some states classify franchise as a form of real estate.
- License*: the permission to perform an act which otherwise would be a trespass or other illegal act. Licenses are granted, for some consideration, to a private party to allow the practice of some business subject to police power regulation.

Generally, an easement gives the private party the most control, while franchises, leases, and licenses grant decreasing levels of private control, although the rights granted can vary significantly. The most basic distinction is that easement and lease agreements give rights to the land, while franchise and license arrangements may not.

The four forms have differing implications for business, including some tax consequences. The nature of the right granted depends greatly on the terms of the grant. In fact, the different ways in which a private party can be granted access to the ROW may be less important than the specific terms of the grant—a more favorable lease may be more desirable to a private party than a restricted easement.

Should/must we open a project to all qualified parties interested in access or capacity?

Can/should we select a single private partner?

How should we screen potential partners?

Exclusivity

Public agencies must determine at the outset whether an arrangement will grant exclusive access or exclusive marketing authority, or whether it will be non-exclusive but limit capacity or duration of the right of access. Another option is to grant exclusive access to a consortium of private firms.

For this discussion, “exclusive” means that during the term of the right, the public agency will not grant a right to another telecommunications facility to occupy or market fiber optic capacity in the same section of the public ROW.¹ Exclusive arrangements have both advantages (administrative ease, enhanced safety) and disadvantages (potential constraints on competition among service providers, lower total compensation received by public sector). To address anti-competitive concerns, public agencies might consider requiring that the private party obtaining access to the ROW not discriminate in licensing its rights to third parties.

¹ It is still unclear to what degree the 1996 Telecommunications Bill will constrain exclusive arrangements in the interests of non-discrimination and barrier-free entry to the ROW for telecommunications. Future regulations or legal precedent will determine whether exclusive access and exclusive marketing rights but not exclusive use are permissible and, if some types of exclusive arrangements are sanctioned, any conditions applied to that partnership and how the private partner should be selected.

Exclusive Arrangements: *single private partner shares public property (ROW/conduit/tower)*

Exclusive access: *private partner builds infrastructure for own use*

P	Higher single firm willingness to pay;	C	Potential non-competitive situation; may limit
R	administrative ease for public agency.	O	public sector's total revenue potential.
O		N	

Exclusive marketer/broker: *private partner markets capacity in own or public infrastructure*

P	Fosters competition but retains	C	Public agency may have to finance and own
R	administrative ease for public agency.	O	infrastructure to retain control of marketing
O		N	rates/conditions.

Non-Exclusive Arrangements: *multiple private firms access public property (ROW/conduit/tower) for own infrastructure*

Number of partners limited by capacity: *public sector accepts private partners until capacity reached*

P	Encourages competition and telecom	C	Greater administrative burden (multiple
R	development; greater revenue potential	O	partners); safety concerns related to recurring
O	than exclusive; expand partnering as	N	construction.
	demand for ROW generated.		

Number of partners limited by time: *public sector accepts private partners during defined initial period*

P	Encourages competition and telecom	C	Greater administrative burden (multiple
R	development; greater revenue potential	O	partners); precludes future partnering
O	than exclusive; limited construction	N	opportunities as market conditions change.
	period.		

Consortium: *public sector requires private partners to form coalition with designated lead firm*

P	Competitive and revenue benefits of non-	C	Administrative burden of consortium lead may
R	exclusivity without administrative burden	O	discourage participation; other concerns
O	of other non-exclusive arrangements.	N	depend on conditions (e.g., time limit).

Geographic Scope

Shared resource projects can cover long segments of roadway or focus on specific areas. Projects can be state-wide or limited to a single highway segment or municipality, depending on public sector needs, administrative preferences, and private partner focus. Geographic definition can affect private partner response and the type and magnitude of compensation received by the public sector. The best option depends on factors such as considerations of administrative burden, service interests of potential bidders, and private sector willingness to install infrastructure outside their primary area of interest.

In essence, there are three basic geographic formats plus a hybrid (fourth) format:

- Extensive single project*— all (or most) segments and corridors in the public sector telecommunications plan are included in a single project;

Should we have only one or a very few large projects?

Should we allocate available ROW among a lot of small projects?

Should we give bidders free rein to define project size and location?

How is this issue affected by decisions on exclusivity?

- *Several smaller projects*— the state-wide plan is disaggregated into a series of regional projects, negotiated separately;
- *Bidder-defined projects*— the public sector invites bidders to define project scope in terms of ROW segments that interest them; and
- *Bidder-constructed packages*— a hybrid allowing bidders to combine individual public-sector-defined projects, giving some flexibility in selecting geographic regions but precluding “cherry picking” specific road segments.

Public Sector Defines One or Few Large-Scale Projects: *public sector specifies state-wide program as one or very few projects, bid on a take-it-or-leave-it basis*

- | | |
|--|---|
| <p>P Public sector minimizes administrative burden; requires only limited coordination to achieve complete and continuous infrastructure (public and private); may force private partners to cover unpopular ROW segments.</p> | <p>C Discourages or eliminates private partners with limited local interests.</p> |
| <p>R</p> | <p>O</p> |
| <p>O</p> | <p>N</p> |

Public Sector Defines Many, Smaller Projects: *public sector disaggregates state-wide program into smaller projects, bid on a take-it-or-leave-it basis*

- | | |
|---|---|
| <p>P Encourages response by smaller/local telecom firms; public sector can sequence projects to fit administrative resources and needs.</p> | <p>C Requires greater public sector administrative effort and coordination among barter projects to achieve contiguous, integrated public infrastructure. Some segments may have no bidders. Long-distance telecom providers may be discouraged by burden of achieving continuous ROW for projects.</p> |
| <p>R</p> | <p>O</p> |
| <p>O</p> | <p>N</p> |

Bidders Define Projects: *bidders define location, geographic size of project*

- | | |
|---|--|
| <p>P Highest bidder interest and response; attracts bidders of all sizes and market orientations.</p> | <p>C In barter projects, possible gaps in public infrastructure coverage where private sector has no interest.</p> |
| <p>R</p> | <p>O</p> |
| <p>O</p> | <p>N</p> |

At base, decisions on project scope depend on administrative considerations and the type and strength of market demand for highway ROW— that is, private sector willingness to pay for access to ROW that are integral to their business development.

Decisions on geographic scope depend not only on administrative and technical implications of the different options but also on decisions regarding exclusivity. For example, telecommunications providers interested in extensive long-distance ROW access risk of having gaps in their network if projects are small and exclusive— that is, only one firm will be allowed access to ROW under each project.

Exclusive Access <i>one partner each ROW segment</i>	Non-Exclusive Access <i>several partners possible each ROW segment</i>
Public Sector Defines One or Few Large-Scale Projects	
Joint characteristics of exclusive and large-scale projects; no factors unique to combination.	Joint characteristics of non-exclusive and large-scale projects; no factors unique to combination.
Public Sector Defines Many, Smaller Projects	
May discourage bids from large interstate firms because smaller project size coupled with exclusivity increases risk of discontinuity in ROW access.	Non-exclusivity counters risk that firms requiring long-distance contiguous ROW segments will be shut out of important segments.
Bidders Define Projects	
Precludes projects that overlap in particular ROW segments, may result in patchwork public sector network in barter arrangement.	Lower risk of gaps in public sector infrastructure than under exclusive (allows overlaps) but greater than under publicly defined projects.

Social-Political Issues

Two social-political issues may affect how shared resource arrangements are structured: most-favored community issues—comparable compensation for all communities involved in shared resource arrangements, and geographic and social equity—equitable access to and benefit from such arrangements. Both may affect geographic scope and compensation.

The perception that “holding out” by restricting access leads to more favorable arrangements with private vendors (i.e., the last link in the network can exact the highest price) may be addressed by inserting a “most-favored community” clause in the contract. Such a clause ensures that the entity obtaining rights in the ROW must provide all grantors of those rights the same benefits, concessions, or payments. Since the market value of different links in the network may vary, some situations may require limiting this clause to assuring equality of benefits with “similarly situated” jurisdictions rather than across-the-board financial parity.

Equity issues include several related aspects:

- Distribution of communications capacity or project revenue among public agencies and uses, rather than restriction to transportation-related needs;
- Distribution of communications capacity evenly among political and geographic jurisdictions in the public agency’s domain, even when not justified in a strict cost-benefit or profit-oriented framework;
- Distribution of cash revenues among projects and areas so that all members of the population receive “equal” benefits from private use of the ROW.

Ensuring equity may mean requiring that benefits be provided to populations the private sector would not otherwise choose to serve (e.g., many telephone companies must maintain rural networks). The public agency may also want communication links there for its use.

Must we provide other agencies with capacity or project revenues?

Must capacity or project benefits be distributed evenly among the general population?

Can/should we require private partners to install infrastructure in areas that generate social but not revenue benefits?

How can communities be assured that they receive equivalent treatment?

What process do we use to select private participants?

Are competitive bids mandatory for legal or political reasons?

What criteria do we use to screen bidders?

Are we free to negotiate terms?

How do we treat subsequent bids for access?

Procurement

Shared resource arrangements face many of the same issues as other procurements:

- The public agency must determine whether the procurement must be competitive (in this case auction, where product offered is competed; this is analogous to the conventional low-bid procedure in which the product is set and payment is competed) or whether it can request proposals and negotiate the arrangement and the terms of the agreement.
- If the public agency requests a high-bid proposal based on specifications it develops and consults with a private entity in developing those specifications, that entity may be precluded from bidding; allowing that entity to participate may create a perception of anti-competitive behavior.
- The public agency must determine whether to obtain services from one or more vendors. Obviously, considerations related to exclusivity play a role here. Bundling services into one proposal necessarily favors larger vendors. Multiple discrete projects could promote competition but may raise problems associated with broad access to ROW and greater managerial complexities.

Massachusetts has addressed this issue by providing for a lead company agreement in which the first permit applicant is responsible for constructing all of the Commonwealth's "component," but subsequent permittees must share the cost. Further, the lead company is responsible for all maintenance, on a shared cost basis with other participants. Initially the ROW is open to all applicants. Thereafter a lead company is designated and notice is published, and other entities have several weeks to enter into participant agreements. Those who do not may be shut out later.

CONTRACT ISSUES— What Features Are Important?

Contract issues include questions of liability and relocation responsibility, as well as modification procedures and intellectual property rights.

Relocation

Allocation of responsibility for relocation in case of roadway improvements affects private partner willingness to pay for ROW insofar as it carries a financial responsibility as well. Typically, when a utility is granted a franchise in the public ROW, it must relocate at its own cost if the public agency wants to improve the ROW. In shared resource projects, two factors that have supported this policy may be subject to challenge.

There is a belief that private companies gaining access to public property (ROW) have not compensated the public sector for the full value of the benefit they receive; e.g., utilities that have paid no fees or significantly less than full market value. In a shared resource project, however, this rationale may not fit if the party granted access to the public ROW has paid fair market value for such access. The variety of relocation arrangements negotiated in the case studies indicate a shift away from the traditional pattern (of utility responsibility for relocation).

Traditionally, “improvements” have been conceptualized as physical improvements to the roadway. Two kinds of alterations can trigger relocation:

- Road widening and other highway road surface or ROW construction
- Installation within the ROW of transportation-management facilities.

It is important that an accepted definition of “improvements” be incorporated in the contract.

If the public agency has entered into a public-private partnership, the relationship may be seen as “privatizing” the agency. As a “private” entity, it may not be able to displace the private entity whose facilities were located in the ROW. Thus in shared resource arrangements, where it is considered appropriate to require the private entity to assume all or a significant portion of relocation costs to accommodate public sector-initiated improvements, the public agency should not rely upon existing laws.

Most parties in the case studies anticipated this issue and thus incorporated fairly specific relocation provisions into their contracts; however, there is no consensus on the allocation of responsibility. Other case studies demonstrated that the “partnership” nature of shared resource projects suggests a departure from the traditional policy of imposing all relocation costs on the private party.

Who will pay for and manage the relocation of infrastructure if road improvements require it?

Who is legally liable for the effects of system malfunctions, accidents due to work on the infrastructure, and breach of warranty?

Liability

Liability issues can arise from system failure due to physical damage or internal malfunctioning, vehicular accidents resulting from interference in the roadway, and breach of warranty. Liability includes responsibility for system repair, consequential damages (economic repercussions), and tort actions. Public agency immunity from liability may be compromised by participating in a public-private venture, and participants may find it difficult to obtain insurance to cover all identified risks. Seemingly minor differences in contract language can produce significantly different allocations of liability.

Type of Liability	Issues
Actual damages	Assigning responsibility for physical repair (generally rests with party that causes damage)
Consequential damages (resulting from service interruption or breach of warranty)	Limiting public agency liability for damages from routine road work Where public and private cable or conduit are separate, allocating liability for damage from maintenance activities (assuming maintenance has not been delegated to a single party) Where several private entities are permitted access, setting up a dispute review mechanism requiring all potential parties to join their claims in one action (reduces public agency's exposure to claims) Providing in licensee's customer contracts that customers will not hold licensee and public agency liable for consequential damages due to service interruptions
Tort actions	Limiting vendors' exposure Determining scope of sovereign immunity, especially in "joint ventures"
Other	Obtaining adequate surety for vendor's obligations at reasonable cost

Modification

Shared resource arrangements may or may not include explicit provisions for system modification; that is, technological upgrading to keep abreast of technical improvements and expansion of capacity to meet subsequent needs. Technology advances aside, when the arrangement is negotiated the public agency may not be able to envision all the capabilities it may desire in the future and thus may later find itself severely constrained by insufficient communications capacity. Care should be taken not to unduly restrict future options; at the same time, care must be exercised to not burden private partners with essentially open-ended obligations that might cause them to withdraw their offer.

Intellectual Property

Intellectual property involves intangible components (e.g., software programs) of the operating system that might not be available to the public sector partner when the partnership is dissolved after the lease period unless specifically addressed in the contract.

It may be difficult to distinguish intellectual property that existed before the contract from that arising during the performance of the contract. Where complex in-kind ITS services are requested in return for access to the ROW, the allocation of rights in technology may be particularly important. The private facilities may need to interconnect with public ITS facilities or services, raising concerns about granting the public access to private, proprietary, communications protocols. This concern may be reduced by separating fiber for the public and private parties.

In addition, the public agency needs to consider its ability to upgrade and update facilities after the contractor's obligations end, and its ability to operate systems if the contractor defaults. Typically, the vendor will not want to give the public agency access to its proprietary intellectual property. This issue may be addressed through an intellectual property escrow agreement. Finally, the public agency will certainly want to address any restrictions on the private sector's use of data generated as a result of the project. Again, this issue should be clearly addressed in contractual arrangements.

Who is responsible for updating and modifying the infrastructure?

Can we bind vendors to update technology indefinitely?

Can we include future expansions in compensation?

Will vague future obligations affect private firms' interest?

Who has the rights to the intellectual property involved?

How do we distinguish between our intellectual property and that of private partners?

A FINAL REMINDER

Shared resource arrangements offer a new opportunity for public-private partnering for transportation agencies; they are particularly relevant to ITS projects. Although setting up such arrangements requires addressing a number of issues, each issue can be resolved through several options, so that individual projects can be structured to suit particular circumstances. Indeed, the number of shared resource projects that have been initiated and contracted for across the country within the last two years proves that these issues are not barriers and that they can be addressed successfully. Simply stated, there is ample evidence that shared resource arrangements are a viable approach to supporting public sector needs.

Shared resource partnering, however, is market driven. This feature generates limits of two kinds that cannot be circumvented: the upper boundary of compensation levels, and the time within which deals must be consummated. Market conditions determine the compensation that potential private partners are willing and able to provide for access to highway ROW or public property (e.g., conduits or towers). There is no “inherent” value for highway ROW; the value with regard to telecommunications access derives from telecommunications revenue potential for private firms, tempered by the cost of other ROW that might be available to those firms.

Similarly, market conditions dictate response time for prospective partnering. The window of opportunity for individual projects is limited, with the specific time frame depending on local circumstances (both market demand and alternatives offered by competing ROW owners). If the window closes before a partnership is established, the public agency may have to wait until market expansion or industry restructuring generates new demand for ROW.