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MODELS TO SUPPORT STATE-OWNED PARK AND RIDE LOTS AND INTERMODAL FACILITIES

This digest presents the results of NCHRP Project 20-65, Task 32, "Models to Support State-owned Park and Ride Lots and Intermodal Facilities." The research was conducted by ICF International, Fairfax, Virginia, with Valerie J. Southern-Transportation Consultant, LLC (VJS-TC), Fairfax, Virginia, serving as a subconsultant. Valerie Southern and Gary Norris of VJS-TC were the Principal Investigators and authors of this digest. This version, revised from that published in January 2012, reflects changes to data reported by the New Mexico Department of Transportation.

CONTENTS

SUMMARY

This digest addresses the needs and issues associated with state park and ride/intermodal commuter facilities and programs. It identifies deficiencies, best practices, and promising innovations. Research was conducted over an 8-month period and involved interviews with a small but representative sample of managers responsible for administering these programs.

This digest has four chapters, organized as follows:

Chapter 1: Program Surveys–A synthesis of each of the surveyed programs.

Chapter 2: Key Findings and Best Practices–An analytical assessment and identification of best practices.

Chapter 3: Conclusions–Researcher suggestions for managers challenged by the demands for and the costs of public park and ride/intermodal commuter facilities.

Chapter 4: Suggested Research–A short list of suggested topics for additional study.

Key Findings from the Literature Search

A literature search was conducted from June to July 2010. It involved online review of international, national, state, regional, and local periodicals, publications, and articles. Public agency websites were also reviewed. The search resulted in the collection of 84 documents. The key findings from the literature are:

- There is limited information on the administrative, operational, management, and legal processes involved in the maintenance, care, development, and financing of park and ride/intermodal commuter facilities.
- One notable management practice is the use of leasing agreements that eliminate or lessen the cost of land acquisition and facility maintenance.
- One less documented but emerging area of research describes "smart card" and "smart park" technologies, such as real-time parking information systems. These technologies are either in place or being tested.
- Another emerging area examines alternative financing for public transportation services, including the leveraging of public funds, private capital, or both to maintain and modernize public infrastructure. There is limited documentation on how this may apply to park and ride/intermodal commuter facilities.

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Key Findings from the Program Surveys

Thirteen telephone surveys were conducted from August to October 2010 with managers responsible for twelve publicly-owned park and ride commuter services. The key findings from the surveys are:

- **Inventory/Occupancy/Utilization:** The number of park and ride lots varied among the agencies from a low of 19 lots to a high of 326 lots. Average lot occupancy ranged from 40 to 95 percent. A minority of the programs (23 percent) charge fees for parking. They experience the most acute lot utilization rates.
- **Capital Budgets:** If the capital budgets of the small number of surveyed programs are an indication of what is occurring nationwide, park and ride/intermodal commuter facilities should be viewed as emerging and formidable cost and activity centers for state departments of transportation (DOTs) and transit districts and agencies. The anticipated future capital expenditures of just nine of the 13 surveyed programs represent nearly $1.7 billion programmed conservatively over a 20-year period. This is shown in Table 1. Most of the managers of these programs felt they were not keeping pace with customer demands. They believe current funding is not enough.
- **Operating Budgets:** On the operating side there is less clarity. Most of the surveyed programs are administered by limited staff with managers averaging 14 percent of their time to the programs. Their average staffing is about 1.17 employees. The programs have inventories but not all are current. For most of the programs, maintenance is performed by others outside of the park and ride unit; and it is often unscheduled and unbudgeted. Of all of the survey responses, the operating budget response was the most difficult to interpret, in part because several of the managers were not knowledgeable on how their operations are funded.

Based on the profiles of the surveyed programs—developed and refined in Chapter 1 and Chapter 2—a key finding suggests that an imbalance exists in how park and ride/intermodal commuter programs are programmed for the future and how they are managed and cared for today. If there is a continued upward swing of expansions, as suggested by the capital projections of the surveyed programs, more funding from alternative sources will be needed. Equally important, to ensure that the growing number of facilities are managed well, methods for increasing program efficiencies and administrative resources assigned to them will be needed.

Best Practices of Surveyed Programs

The best and most creative practices of several of the surveyed programs included the following:

- Parking fees and pricing strategies correlated with demand, lot utilization, and revenue generation.
- Advanced technologies and techniques that enhanced security and responded directly to the needs of the customer.

Table 1 Estimated future park and ride/intermodal commuter capital projects of the surveyed programs.

Agency	Anticipated Expenditures
Bay Area Rapid Transit District (BART)	$ 948,000,000
California Department of Transportation (CALTRANS)	507,000
Denver Regional Transit District	400,666,000
Florida Department of Transportation—District 6	11,207,520
Maine Department of Transportation	10,296,480
New Mexico Department of Transportation (minimum)	500,000
Rhode Island Department of Transportation	215,000,000
Valley Metro Regional Public Transit Authority	3,736,564
Virginia Department of Transportation—Northern District	49,056,000
Estimated Total	**$ 1,638,969,564**

Source: Statewide Transportation Improvement Programs and Capital Improvement Programs of the surveyed programs. Program totals represent rough estimates of capital expenditure projections over a 20-year period.

- Instructive and very clear program management policies and guidance.
- Effective participation in the complex metropolitan and regional decision-making processes.

These best practices are discussed in Chapter 2.

Conclusions

The conclusions in Chapter 3 address management principles such as asset management, staffing levels, budgeting and pricing strategies, and public-private partnership finance options that may be applied to park and ride facilities. These include design-build-finance-operate agreements and performance-based maintenance contracts.

Suggested Research

Suggested topics for additional research are listed in Chapter 4.

CHAPTER 1 PROGRAM SURVEYS

Twelve park and ride/intermodal commuter programs were surveyed from August to October 2010. This involved 13 telephone surveys and one additional discussion with the manager of a supplementary state program. Sixty-two percent of the surveyed programs are managed by state DOTs. The remaining programs are managed by public transit authorities and transportation districts. In this chapter, brief summaries of each surveyed program are provided. Each summary begins with a program overview followed by information on program staffing, policy, and funding. The planned capital projects for each program are also provided. The state DOT programs are presented first.

1. A State Department of Transportation (DOT) Programs

The California, Florida, Maine, New Mexico, Rhode Island, and Virginia programs are described here.

1. A.1 California Department of Transportation (Caltrans)

The California Department of Transportation (Caltrans) is the state department responsible for managing and administering transportation services. It is a unit of the cabinet-level Business, Transportation and Housing Agency.

Overview. The Caltrans Park and Ride Program was established in 1975. According to the Caltrans *Park and Ride Program Resource Guide*, its purpose is to "improve mobility across California by promoting carpooling and transit usage, thereby removing vehicles from the transportation system and increasing person throughput" (*Park and Ride Program Resource Guide,* 2010, p. 6). This goal complements the policies of the California Transportation Plan. The program represents 33,889 parking spaces in 326 lots. Of the total:

- 208 lots are owned by the state.
- 22 lots are owned by counties.
- 17 lots are owned by local jurisdictions.
- 64 lots are owned by private interests.

Caltrans shares an interest in 15 additional lots: three are city lots; seven are county lots; and five are federal, transit center, and regional bus lots. Leasing agreements are used for lots not owned by the state. Parking at all of the lots is free. An inventory is maintained at the Caltrans central office in spreadsheet format.

According to the program manager, average lot occupancy is 60 percent. This, he reports, is an indicator of the success of the program. If utilization falls below 20 percent, the leasing agreement is terminated or, if the lot is owned by the state, it is converted to a permitted use, such as a child care facility.

Staffing. The program is managed by one Park and Ride Coordinator located at Caltrans headquarters. There is also one Park and Ride Coordinator within each of the 12 Caltrans districts.

Policy and Program Elements. One deficiency, according to the manager, is the program's low priority in state transportation budgeting. One legal issue is state law that limits park and ride lot use to commuters. The manager reports there are no enforcement provisions to ensure commuter-only use and there is no monitoring. As a result, non-commuters park in the lots. Another state law prohibits commercial activity at the lots. As a result, there are no options for generating on-site revenue through retail activity.

Funding. The state assumes 80 percent of the cost for maintaining the park and ride lots. This is from

the department's general maintenance funds. The work is performed by district maintenance crews. Local governments assume 16 percent of the cost for their lots and private land owners, 4 percent. The typical funding sources used for capital improvements are as follows:

Federal Funds
- FHWA—Congestion Mitigation and Air Quality Improvement (CMAQ).
- FTA—Section 5903.

State Funds

In California, user taxes and fees are deposited into state fund accounts. The accounts that support park and ride/intermodal commuter facilities in some way include:

- Transportation Tax Fund: Highway Users Tax Account.
- State Transportation Fund:
  - Local Transportation Loan Account,
  - Public Transportation Account, and
  - State Highway Account.
- Other Funds:
  - Environmental Enhancement and Mitigation Program Fund,
  - Traffic Congestion Relief Fund, and
  - Transportation Investment Fund.

Local Funds
- Local Transportation Funds.

The Caltrans 2010–2011 budget shows a $1.4 billion reduction in various state transportation accounts. The manager indicates this shortfall may hamper efforts to improve and develop the park and ride system.

Programmed Projects. The Caltrans FY08-12 Statewide Transportation Improvement Program (STIP) lists several programmed park and ride/intermodal commuter projects. A representative sample is shown in Table 2.

1. A.2 Florida DOT

Florida DOT develops, maintains, and regulates state public transportation systems and services. It is composed of seven administrative districts; each district is responsible for managing transportation within the boundaries of the district.

Overview. The Florida DOT Statewide Park and Ride Program was established in 1982 and represents 23,664 spaces within 105 lots. Only one of the lots is owned by Florida DOT. The rest are owned by public transit interests (51 percent) and private interests (49 percent). State leasing agreements, covering maintenance and management responsibilities, are used for lots with private or public agency ownership. All of the parking spaces are free to the public except those owned by *Metrorail,* which charges daily or monthly fees. Commuter amenities at the lots include lighting, pedestrian walkways, shelters, benches, and information kiosks. Fifty-six percent of the lots are served directly by bus or rail.

The average occupancy at the lots is 49.8 percent. According to the Park and Ride Manager, the program is considered a success when there is 60 percent or higher occupancy. This goal is achieved or exceeded mostly in urban areas, where there is a high concentration of transit service. If lots do not meet the occupancy goal, headquarters conducts a review with the district in which the lot is located. If low usage continues, the lot is closed.

While there is broad oversight from headquarters, each district administers its own park and ride program. Each is required to submit annual reports on the status of their programs to headquarters. The program manager consolidates the information into a computerized database, which tracks assets including information on space and lot location, size, cost, ownership, ancillary facilities, available transit services, and annual occupancy.

Staffing. One employee at Florida DOT headquarters—Federal Grants Manager—is responsible for overseeing the statewide program.

Table 2 California Department of Transportation representative sample programmed park and ride/intermodal commuter projects (FY08–12).

Name	Description	Costs	Fund Source
Downtown Ione	30-space park and ride facility	$345,000	FHWA CMAQ/Local funds
Sutter Hill Transit Center	Park and ride facility	$1,033,000	FHWA CMAQ/Local funds
Modoc County	Transportation center parking	$200,000	Transportation account/State funds

Policy and Program Elements. The program is defined by two policy documents. The first—Park and Ride Lot Program, Topic No. 725-030-002-f, issued May 14, 2001—explains the goal, objectives, and organization of the program. This document defines the state park and ride program as "a program designed to encourage the use of transit, carpools, vanpools and other high occupancy vehicle modes, by providing safe and convenient parking facilities for commuters" (Park and Ride Lot Program, Topic No. 725-030-002-f, Transit Office, Florida Department of Transportation, May 14, 2011).

This document defines the purpose of the program as: "to provide for the purchase and/or leasing of private land for the construction of park and ride lots, the promotion of these lots and the monitoring of their usage" (Park and Ride Lot Program, Topic No. 725-030-002-f, Transit Office, Florida Department of Transportation, May 14, 2011).

The document further advises that parking facilities must be sited, sized, and promoted for a reasonable expectation of achieving an average occupancy of 60 percent. It confirms that the facilities are intermodal facilities and should be designed to facilitate transfer between modes.

The second document, *State Park and Ride Lot Program Planning Manual*, September 1996 (as amended April 2001), offers methodology and guidance on the following:

- How to evaluate the performance of park and ride lots.
- Processes for facility development and site selection.
- Methods for estimating demand and facility size.
- Procedures for assessing impacts of park and ride facilities.
- Economic analysis and project justification methods.
- External and internal conceptual design of the facilities.
- Program promotion methods and techniques.
- Performance measures.

Funding. Florida DOT headquarters administers an annual grant process where each district submits funding requests for park and ride expansions and improvements. These requests are evaluated based on:

- Available state funding.
- Need.
- Proximity to existing transit service.
- Expected 60 percent or higher occupancy.

No federal grants are used. The monies are from the state transportation fund. In 2007–2008, a total of $1.1 million was awarded to five districts but this covered only 14.4 percent of the total requests. Matching funds of $900,000 from public transit interests supplemented the awards. The manager reports that award levels have decreased each year due to budget reductions.

Because the statewide park and ride program is decentralized and administered primarily by districts, a review of one district program was undertaken and is described here.

1. A.2.a Florida DOT District 6. District 6 is located on the southern tip of the Florida peninsula. It comprises the cities of Key West and Miami and the counties of Miami-Dade and Monroe. Two public transit systems operate within the district:

- Tri-Rail is a commuter rail system operated by the South Florida Regional Transportation Authority (SFRTA).
- Miami-Dade County Transit (MDT) operates bus and rail services called Miami-Dade Metrobus and Miami-Dade Metrorail. The latter is a 22-station, rapid transit system.

While the transit agencies manage and operate their own facilities, their parking lots and garages are part of the District 6 inventory.

Overview. The District 6 program was established in 1982. It represents 11,164 spaces within 30 lots. Three of the lots are owned by Tri-Rail, 26 lots by Metrorail and Metrobus, and one by Florida DOT. Parking is free except at Metrorail lots where there is a daily ($4.00) or monthly ($10.00) fee. The lots are for commuter use only. Overnight parking is prohibited. Commuter amenities include lighting, security, shelters, and benches. Retail services are available at several of the Metrorail garages and lots, where there is transit-oriented development (see the subsequent section, "Policy and Program Elements [Statewide and District]").

According to the program manager, success is defined by the goal of achieving at least 60 percent occupancy at all lots. Currently the goal is exceeded with average occupancy of 68 percent.

Staffing. The district program is administered by one Transit Program Administrator whose park and ride program responsibilities represent roughly 10 percent of his total time.

Policy and Program Elements (Statewide and District). The headquarters manager reports there are no legal or policy impediments to implementing the program.

In District 6, the process for developing and funding park and ride/intermodal commuter projects is part of the process for developing the MDT Transit Development Plan (TDP), which requires agreements among regional stakeholders, representing the MDT, Tri-Rail, Florida DOT District 6, the metropolitan planning organization (MPO), and municipalities. Park and ride projects agreed to by the stakeholders are ranked in the regional TDP and the MPO Priority Project List. During the MPO process, agreements on funding commitments and grant requests are reached. The highest ranked projects are incorporated in the District 6 Five-Year Work Program, which is then incorporated into the Florida DOT Statewide Five-Year Work Program, which meets the broader objectives and priorities of the Florida Transportation Plan.

Each year the number of capital improvements is based on estimates of available funds. Headquarters coordinates its Five-Year Work Program with the seven districts, the Turnpike Enterprise, the Rail Enterprise, the MPOs, the federal government, and local governments. After the Five-Year Work Program is approved, the projects are programmed into the Statewide Transportation Improvement Program (STIP) and each district pursues its work program.

Miami-Dade Transit has an active joint-use development policy that was established 6 years before the start of Metrorail service. The County Board of Commissioners adopted Ordinance 78-74 that provides guidelines and procedures for development at and near its fixed rail properties. Several Metrorail joint development projects with park and ride/intermodal commuter facilities are either completed or underway. The agency receives revenues of $1.5 million annually from two of these properties.

Funding. There is no operating budget specific to the District 6 park and ride program. Its costs are comingled with other functions. For capital improvements, in addition to headquarter grant awards, District 6 receives a mix of federal, state, and local funds, described here.

Federal Funds. In the Five-Year Work Program, federal funds supporting the development of park and ride/intermodal commuter facilities represent roughly $657.2 million or $131.4 million annually.

State Funds. State transportation activities are financed through a State Transportation Trust Fund in which federal aid and traditional local revenue (user fees, taxes, and surcharges) are deposited. As required by Florida law, a minimum of 15 percent of the State Transportation Trust Fund deposits must be allocated to public transportation programs, representing:

- Public Transit Block Grant Program.
- Transit Corridor Program.
- Public Transit Service Development Program.
- Commuter Assistance Program.
- Park and Ride Lot Program.
- Intermodal Development Program.
- Transportation Regional Incentive Program.

Local Funds. Transit agencies and local governments contribute their share or local match to the park and ride/intermodal commuter projects that they request and support. This match is typically drawn from local operating or capital funds.

Programmed Projects. Two representative District 6 park and ride/intermodal commuter projects from the FY11 STIP and their fund sources are shown here.

Miami Intermodal Center—Central Station (FY2011)

- *Cost:*
  - Preliminary Engineering—$187.8 million,
  - Right of Way—$2.5 billion, and
  - Construction—$49.2 billion.
- *Fund Sources:*
  - Federal: FHWA STP Urban;
  - State: State Primary Highways, State Infrastructure Bank, District Dedicated Revenue, State In-House Product Support; and
  - Local: Local Funds.

Tri County Rail—Opa-Locka Station—Additional Parking—Park and Ride Lots (FY2011)

- *Cost:* $446,790.
- *Fund Sources:*
  - State: State Public Transportation funds, and
  - Local: Local funds (*Tri-Rail*).

1. A.3 Maine DOT

Maine DOT is a cabinet-level agency responsible for the regulation and maintenance of roads, highways, bridges, and other public transportation services and infrastructure.

Overview. The Maine DOT Park and Ride Program was established in 1988. It represents 2,418 parking spaces within 41 lots. Twenty lots (49 percent) are state-owned, 12 lots (29 percent) are owned by the Maine Turnpike Authority, and nine lots (22 percent) are owned by private interests. The program has an average lot occupancy of 50.8 percent.

- 80 percent of the lots have lighting.
- 37 percent of the lots are located at a fixed bus route but only one lot has a bus shelter.
- 22 percent of the lots are located within a commercial site with retail services.
- 5 percent of the lots have bicycle parking.

The Maine DOT park and ride lots are free to anyone. Overnight parking is prohibited. According to the Park and Ride Manager, the purpose of the program is to:

- Increase the number of park and ride users.
- Decrease vehicle miles traveled statewide.
- Reduce air pollution.
- Offer viable alternatives to single occupancy vehicle travel.
- Develop private-public partnerships.
- Encourage efficient land use patterns.

Maine DOT assesses its park and ride assets roughly every 2 years. Its 2007 report (*Maine's Park and Ride Lots, System Update*) recommends continuation of public-private partnerships to increase shared-use parking that occurs at 51 percent of the lots. A memorandum of agreement is used to define the terms and conditions of these arrangements. Maine DOT's public-private partnerships are typically with municipalities, other state agencies, churches, and businesses.

According to the manager, the creation or upgrade of a park and ride lot may occur in several ways and often on a project-by-project basis, as follows:

- Traffic Permit Process: During the permit process, Maine DOT may negotiate with a developer the option of providing a lot within a commercial area in lieu of paying the developer impact fee.
- Negotiation and Trade Off: Maine DOT may approach a private property owner, municipality, and/or business and offer transportation improvements, in exchange for the owner providing park and ride service at the site.
- Within State Right of Way: If determined feasible and as a low-cost option, Maine DOT may construct a park and ride lot on state property within a commuter traffic area.
- Land Acquisition: Maine DOT may acquire land to construct a park and ride lot, to support an already programmed regional highway or transit project.
- Improvement or Expansion: Maine DOT may improve an existing park and ride lot based on a need expressed by local or regional interests.

Staffing. The program is managed by one Policy Development Specialist within the Maine DOT Planning Division and represents 5 to 10 percent of her time. One staff member from the legal division prepares the shared-use lease agreements. Another staff member from the finance division prepares reports on the status of federal grants used for the program.

Policy and Program Elements. According to the manager, there are no legal or policy constraints to administering the program; however, funding is an issue. The manager believes the full potential of the program will not be realized until the following measures are in place:

- There is increased federal and state funding for capital improvements and maintenance.
- There are more shelters and signage at the lots.
- There is more education and outreach to employers and commuters, to increase their awareness and participation.

Maine DOT's principal partner in managing the program is the Maine Turnpike Authority. The agencies meet quarterly to discuss objectives, policies, and strategies for achieving higher use. Maine DOT also conducts routine meetings with municipalities, local and regional planning agencies, and MPOs to assess and gauge commuter parking needs. Projects identified in the process, and deemed viable, are incorporated into the Maine DOT Long Range Transportation Plan and, if funds are available, they are programmed into the STIP.

Funding. The Maine DOT Park and Ride Program receives a CMAQ grant of $1.2 million from the U.S. Department of Transportation (U.S. DOT) every 2 years. This is used as seed money for planning and developing the program. The 20 percent match to the federal grant is achieved through a variety of sources, such as state highway funds and state bond monies, and through in-kind contributions from municipalities or regional interests. If, for example, a municipality strongly advocates for a park and ride facility, it may pay the 20 percent match in cash or use its general fund to cover the cost of maintenance. If the park and ride is part of a regional highway improvement project, the 20 percent match is typically provided by the state. Each circumstance is different depending on the terms of the request, where the lot is located, and its purpose. According to the manager, a request for funds to construct or improve a lot is prioritized by the department, based on four factors:

- Cost and available funding.
- Site location (on or near a major road).
- Expected use.
- Connectivity to other modes such as a fixed bus route.

Programmed Projects. Examples of capital projects in the Maine DOT FY10–13 STIP are shown in Table 3.

1. A.4 New Mexico DOT

The New Mexico DOT manages transit, rail, aviation, and highway systems and services statewide.

Overview. The New Mexico DOT Park and Ride Bus Service Program is not a traditional program covering just lots. It also is a bus and shuttle program. With 131 daily bus departures on ten routes, including two shuttles, and 258,086 passenger trips in 2010, the New Mexico DOT Park and Ride Bus Service Program is the state's sixth largest transit system. A description of each component is provided here.

Park and Ride Lots: The program utilizes approximately 1,208 spaces in 24 lots. Because the majority of the system's lots are used under intergovernmental agreements or leased from private owners, most of the spaces available to the New Mexico Park and Ride program are also available for users other than park and ride passengers.

- Ten of the lots are state-owned.
- Ten of the lots are owned by local governments.
- Three of the lots are owned by private interests.
- One of the lots is owned by a tribal government.

Average lot occupancy ranges between 40 and 50 percent. All parking is free. Commuter amenities include lighting, security, covered shelters, and benches. The program manager defines underutilized lots as having "extra parking capacity." When lots are underutilized, the New Mexico DOT Transit and Rail Division promotes the lot to the public and has offered free bus service from that lot for one week. In addition to operating from lots, New Mexico Park and Ride also makes 19 curb-side stops, including stops located on two federal facilities.

Table 3 Maine Department of Transportation representative sample programmed park and ride/intermodal commuter facilities state transportation improvement program (FY10–13).

Location	Description	Cost/Fund Source
Auburn	150 space park and ride lots as part of an intermodal facility	Federal: $48,000 State: $12,000
Bath	Intermodal passenger facility and parking	Federal: $500,000 Local: $52,736
Portland	Partial funding for intermodal passenger facility served by Concord Coach bus and Down-easter rail line – 370 commuter parking spaces	Federal: $72,226 State: $18,057

Bus Service: In addition to managing the parking facilities, New Mexico DOT contracts with a private operator for bus service to and from the lots. The fleet consists of twenty-six 57-passenger motor coaches and two spares. The routes and their average daily ridership are shown in Table 4.

Monthly bus passes cost $60 or $90. A system-wide monthly pass costs $150 and enables unlimited trips on the bus and the NM Rail Runner Express, which is the commuter rail service between Belen, Albuquerque, and Santa Fe. New Mexico DOT estimates an average monthly savings of $631 over single occupancy vehicle travel for bus commuters (assuming an 80-mile round trip, 30 mpg, $0.50 per mile vehicle operating and ownership cost, and a $90 monthly pass).

Shuttle Service: In addition to parking and bus service, New Mexico DOT Park and Ride operates two shuttles in the Santa Fe area— the Santa Fe South Capitol Station Shuttle and the NM599 Station Shuttle. The shuttles operate weekdays and carry rail and Park and Ride passengers to destinations not easily accessible by bus. The shuttles are free with a Park and Ride monthly pass, Rail Runner Express valid ticket, or Santa Fe Trails pass. Otherwise, there is a one-way fare of $1.00.

According to the manager, in 2010, the NMDOT Park and Ride Bus Service Program

- Reduced traffic congestion by removing an estimated 7.7 million vehicle miles of travel from the busiest state highways during the busiest commute hours.
- Reduced carbon dioxide emissions by over 3,700 tons.
- Reduced gasoline consumption by 380,000 gallons.

Staffing. The program is administered by staff within the New Mexico DOT Transit and Rail Division, representing 1.5 full time equivalents.

Policy and Program Elements. According to the manager, lot occupancy, utilization, security, and safety define the success of the program. Moreover, the manager reports that the addition of the shuttles which transport passengers from employment sites to rail and the lots has been "very successful." One obstacle reported is current state and federal funding levels, which limit program service levels. Another challenge is the difficulty in acquiring property for additional lots.

The New Mexico DOT Transit and Rail Division administers the Park and Ride Bus Service Program. It also manages NM Rail Runner Express passenger rail service in partnership with the Rio Metro Regional Transit District, and provides support for commuter

Table 4 New Mexico Department of Transportation FY2010 park and ride program—bus service.

Name	Route	Avg. Daily Ridership
Orange	Santa Fe and Las Vegas, NM	86.5
Red	Espanola, Pojoaque, and Santa Fe	75.3
Green	Espanola and Los Alamos	195.9
Blue	Santa Fe, Pojoaque, and Los Alamos	227.6
Purple	NM599 Rail Station and Los Alamos	137.2
Silver	Las Cruces/New Mexico State University and White Sands Missile Range	59.9
Turquoise	Moriarty and Albuquerque/Sandia National Lab	36.7
Gold	Las Cruces, Anthony, Texas, and El Paso, Texas	102
NM599 Station Shuttle	Santa Fe	59.5
South Capitol Station Shuttle	Santa Fe	69.8

rail planning and operations for existing and proposed passenger rail service.

The Division is the FTA-designated recipient for rural, small urban, and metropolitan transit planning program grants. As the designated federal recipient, the division administers all federal transit grants, except for those in the Albuquerque metropolitan region.

Funding. For bus operations, New Mexico DOT contributes $5.7 million annually, which is supplemented with $300,000 from rural intercity bus funds (Section 5311f). Funding revenue is also provided by the County of El Paso, Texas, advertising revenue, and passenger fares. On-going maintenance of the lots is estimated to be $12,000 annually. New Mexico DOT pays $750 per month for use of the three private lots and $1,000 per month for maintenance in addition to $1,000 per lot for annual snow removal. NMDOT estimates that its maintenance of lots owned by the state and local governments costs approximately $200 per month.

Programmed Projects. NMDOT Park and Ride Bus Service estimates $0.5 to $1.5 million in capital lot improvements over the next 3 to 5 years.

Note: Revisions to section *1. A.4 New Mexico DOT* in this digest resulted in the deletion of one table (Table 5). The balance of the digest retains the original table numbering and pagination.

1. A.5 Rhode Island DOT/Rhode Island Public Transportation Authority (RIPTA)

The Rhode Island DOT is responsible for the construction, maintenance and inspection of state roads, highways and bridges. The Rhode Island Public Transportation Authority (RIPTA) is the operator of public transit service. Together Rhode Island DOT and RIPTA oversee the state park and ride program.

Overview. The Rhode Island Park and Ride Program was established before 1980. It represents 1,644 spaces in 20 state-owned lots. There are also nine additional lots; five owned by local government and four by private owners. Average lot occupancy is 55 percent. Parking is free.

- 95 percent of the lots are for commuter use.
- 25 percent of the lots have bicycle parking.
- 10 percent of the lots have designated handicapped parking.
- Most have lighting and security.

There is no specific policy for underutilized lots. If a lot is chronically underutilized, RIPTA makes the determination to discontinue bus service to it; however, this seldom occurs.

According to Rhode Island DOT, the success of the program is defined by economic conditions. If gas prices rise, there is a higher use of the lots. If the gas price declines, lot use declines. Also, according to Rhode Island DOT, one program shortfall is the size of the state, which makes it difficult to market the park and ride option. The average Rhode Island

commute takes 23.5 minutes. Because of the short work trip, 80 percent of commuters drive alone.

Staffing. The responsibility for managing the program is shared equally by Rhode Island DOT and RIPTA. At Rhode Island DOT, one Principal Planner dedicates 2 percent of his time to the program. At RIPTA, one Operations Manager dedicates 1 percent of his time.

Policy and Program Elements. The Rhode Island DOT manager reports there are no constraints or impediments to operating the program. He believes its best features are the good working relationship between the agencies and the manageable size of the program. While there have been no changes to the program since inception, the state is undertaking an aggressive rail intermodal commuter facility program, described in the subsequent "Programmed Projects" section.

Funding. Rhode Island DOT annually budgets $30,000 for park and ride lot maintenance. Other administrative and operating costs are not known. The primary source of revenue for Rhode Island DOT and RIPTA operations is the motor vehicle fuel tax. Other RIPTA revenue is generated from its passengers (28 percent) and advertising and miscellaneous (12 percent).

Each agency's capital program is largely supported by federal dollars. The 20 percent match is provided through general obligation bonds. The state STIP shows that planned park and ride/intermodal commuter projects are supported with FTA Section 5307, 5309 and 5311 grants and FHWA CMAQ, Enhancements, Highway Program, GARVEE, and Pavement Management funds. The projects are also supported with congressional earmarks.

Programmed Projects. One example of a STIP project is the South County Commuter Rail Project—a 20-mile commuter rail extension from Boston with station stops in Providence, Warwick, and North Kingstown. The project is funded with federal funds, congressional earmarks, and private sector participation. Two intermodal commuter stations are planned.

The Warwick Intermodal Station will open this year, connecting rail, bus and auto modes to the T.F. Green airport. The project includes the station, an elevated people mover, a rental car facility, an intercity bus hub, and a parking garage for rental cars (2,200 spaces) and commuters (1,000 spaces). A public-private partnership representing the RI Airport Corporation and rental car agencies will manage the rental car facility. When completed, the station will be the closest rail connection to a major airport terminal in the country. The total estimated cost is $222 million.

The Wickford Junction Station is expected to serve 58 percent of the rail ridership generated in the North Kingstown service area. It will be built as a public-private partnership with an adjoining private developer and will consist of a parking garage with 1,000 commuter spaces and 100 spaces for mixed use retail. The total estimated cost is $49.6 million. New Starts, Rail Modernization, and CMAQ funds are the primary FTA and FHWA fund sources.

1. A.6 Virginia DOT

Virginia DOT is responsible for building, maintaining, and operating state roadways, bridges, and tunnels. It is governed and funded by the Commonwealth Transportation Board, which also funds state public transit services through separate agencies.

Overview. The Virginia DOT Park and Ride Program was established in the early 1980s. All spaces are free to the public. The program represents an estimated 61,835 spaces within about 309 lots. The inventory and average occupancy percentages were compiled from the park and ride inventory prepared by the Virginia DOT Program Manager. While enabling an understanding of the magnitude of the program, the numbers for the state program are not considered final or official until a comprehensive study is completed in 2011. The following are estimated figures:

- 38 percent of the lots are state-owned.
- 27 percent of the lots are owned by private interests.
- 7 percent of the lots are owned by local jurisdictions.
- 6 percent of the lots are owned by the Virginia Railway Express (VRE) and the Washington Metropolitan Area Transit Authority (WMATA), and have designated car pool and van pool spaces.

Ownership of the remaining lots is not known. About 20 percent have shelters and benches. Another 12 percent have bicycle parking. Success, according

to the manager, is determined by the needs of commuters. Average occupancy is about 50 percent but at several locations demand exceeds capacity on a daily basis. The park and ride inventory is maintained at the Virginia DOT central office as an electronic spreadsheet. Its data fields are:

- Owner ID.
- Maintain ID.
- Number of Spaces.
- Number of Handicapped Spaces.
- Paved.
- Surface-Striped.
- Transit Service.
- Transit Shelter.
- Bike Provision.
- Lights.
- Fenced.
- Signed.
- Number of Vehicles Parked.
- Expansion Needed.
- Telephone.
- Facility Location.
- Staff Comments.

The inventory was partially updated in 2006 but, according to the manager, it is incomplete and not an accurate compilation of all assets.

Staffing. The program is administered by one Policy and Planning Specialist position, located in the central office Transportation Mobility and Planning Division. Twenty-five percent of this staff member's time is dedicated to the park and ride program.

Policy and Program Elements. The process for identifying and funding new park and ride facilities is defined by the Surface Transportation Plan (STP) which is the strategic plan for future development of all modes of transportation in Virginia. From a policy perspective, the STP has targeted park and ride facilities as a future priority, as stated here:

> "MPO Long-Range Plans were examined in order to identify existing regional recommendations for Park and Ride facilities. Additionally, some regions have conducted Park and Ride studies or have developed transit plans that recommend locations for new or expanded facilities. The recommendations in these sources were compiled and reviewed by VDOT. Following this initial review, MPOs and PDCs were given the opportunity to make additional suggestions for new or expanded Park and Ride Facilities. Since not all of the regions have completed Park and Ride studies or transit plans, **VDOT plans to conduct a statewide Park and Ride Study beginning in 2010. This study will evaluate the existing inventory of Park and Ride Facilities and identify current and future Park and Ride needs throughout the state**" (Emphasis added. Virginia STP 2035 [draft March 2010], pp. 3–23).

Federal state planning and research (SPR) grants fund the STP planning activities.

Virginia DOT efforts to develop and expand park and ride/intermodal commuter facilities are complemented by the grant programs of the state Department of Rail and Public Transportation (DRPT). The agency is the designated recipient of certain federal grant funds. It issues these and state grants to local governments, district commissions, management associations, service corporations, human service agencies, and private non-profit organizations. Grants that support park and ride/intermodal commuter facilities are shown in Table 6.

DRPT does not fund construction. Its priority is to increase usage at existing facilities, as explained by the manager of mobility programs:

> "Here is an example of how DRPT provided funds to a Virginia county to increase usage of an existing park-and-ride lot. Loudoun County, Virginia received a grant through DRPT to promote new bus service at a specific park-and-ride lot (Dulles South). The lot was underutilized and by adding the bus service Loudoun County hoped to alleviate some of the overcrowding at other park-and-ride lots while increasing transit service. There was a marketing effort of $17,447 (October 2006–March 2007) that consisted of ads in the local and regional newspapers. A brochure was also created. All ads and the brochure feature the Dulles South park-and-ride lot as the place to go to ride the bus. The lot has 250 spaces and before the bus service and promotion, less than half of the spaces were used. Ridership on the bus mirrored the parking lot usage—a 70% increase from the beginning of the promotional period to the end. Loudoun County also implemented a shuttle service from a few of the small park-and-ride lots to a large park-and-ride lot that is overcrowded and is served by bus service." (Manager of Mobility Programs, Virginia Department of Rail and Public Transportation, e-mail to the research team, October 22, 2010.)

Table 6 Virginia Department of Rail and Public Transportation state and federal grant programs (supporting park and ride/intermodal commuter facilities).

Grant Program	Program Description	Matching Ratios
STATE PROGRAMS		
Operating Assistance	Costs borne by eligible recipients for operating related public transportation expenses	Up to 95% of eligible expenses.
Capital Assistance	Costs borne by eligible recipients for public transportation capital projects	Up to 95% of eligible expenses.
Demonstration Project Assistance	Assists communities in preserving and revitalizing public or private-public transportation service by implementing innovative projects	Up to 95% of eligible expenses.
Technical Assistance	Supports planning or technical assistance to help improve or initiate public transportation-related services	Up to 50% of eligible expenses. Federal funds may be provided to support 80% of project costs.
TDM/Commuter Assistance	Supports administration of existing or new local regional TDM/Commuter Assistance programs	Up to 80% of eligible expenses.
FEDERAL AID PROGRAMS		
FTA Section 5307	Supports operating and capital costs of transit operators in small urban areas	Up to 50% of net operating expenses. Up to 80% of eligible capital expenses.
FTA Section 5311	Supports operating and capital costs of transit operators in non-urbanized areas	Up to 50% of net operating expenses. Up to 80% of eligible capital expenses.

Source: Virginia Department of Rail and Public Transportation Program Application Guidance, November 2008.

Virginia DOT recommended that its northern district be contacted for study, noting that the district program is the best example of park and ride management in the commonwealth. The district program is described here.

1. A.6.a Virginia DOT—Northern District (NOVA). Virginia DOT—Northern District (NOVA) is composed of four counties: Arlington, Fairfax, Loudoun, and Prince Williams counties. The District Office provides transportation planning, engineering, permitting, maintenance, and construction services.

Overview. The NOVA Park and Ride Program supports one of the most highly utilized high occupancy vehicle (HOV) systems in the United States. Eighty percent of the person trips approaching the Capital Beltway on I-95 and destined to the Arlington and Washington, D.C., core areas, in the AM peak period, use either HOV or transit modes. Similarly, HOV facilities are present on I-66, the Dulles Toll Road and US-1.

The District Park and Ride Program was established in the 1970s to support HOV services. The program represents 21,000 spaces within 80 lots. Unlike other surveyed park and ride programs, nearly one-half (48 percent) of the lots are privately owned. The remaining are owned equally by the state and the counties.

Average lot occupancy is 66 percent but the state lots have a consistent 80 to 90 percent occupancy. Commuter amenities include public bus service, lighting, security, bicycle parking, shelters, benches, sidewalks, information kiosks, and public telephones. There are no retail services. The lots are for commuter use only. Lot maintenance is the responsibility of the owner.

According to the manager, underutilized lots are defined as having less than 50 percent average occupancy. NOVA informs the public of space availability at these lots through marketing, promotion, and postings on its website. The manager believes the program is "highly successful" because of the following characteristics:

- Proximity to the regional HOV network.
- Sustained high utilization rates.
- Uniform use of cooperative leasing agreements. Of the 38 lots held by private interests, 28 are governed by contractual leasing agreements between private land owners and jurisdictions.

The manager estimates that the program has taken 16,000 to 17,000 vehicles off district roadways annually.

One difficulty, according to the manager, is the slow project development process that can take several years before a new facility is constructed and opened. Another difficulty is the absence of consistent and long-term funding. The program must compete with other state and regional transportation priorities during a period of acute budget cuts and shortages. To overcome this, the manager coordinates early in the project prioritization and funding process with local jurisdictions, transit agencies, and the MPO.

The manager believes the program can be replicated by other state DOTs; however, he notes that, to ensure the highest efficiency, facilities should be located near HOV and transit services.

Staffing. The program is managed by one position, a Senior Transportation Planning Engineer who dedicates 50 to 60 percent of his time to the program. His responsibilities include:

- Maintaining the regional park and ride inventory.
- Coordinating with VDOT headquarters, local jurisdictions, transit agencies, and the MPO.
- Identifying future needs and incorporating park and ride priorities into the region's Six-Year Work Program and STIP.
- Marketing the program and educating the public on space availability.
- Identifying potential locations and participating in the design of new lots.

The district does not have an operating or maintenance budget for its park and ride program. The manager directs the resources of the district's maintenance, engineering, permitting, and planning staff on an as-needed basis.

Policy and Program Elements. The growth and development of the NOVA program is controlled by regional stake holders within the district. They include the cities, counties, transit agencies, and the MPO. According to the manager, the need for the park and ride facility is determined first. If demand can be quantified and a feasible location is found, funding availability is determined. When the region's allocations of FHWA STP funds and/or other fund sources are identified, the stake holders must agree to use the funds for the proposed park and ride. Once the agreement is reached, the project is included in the district's Six-Year Work Program and then programmed to the STIP.

Funding. The estimated cost to maintain the statewide park and ride lots is $500,000 over a 2-year period. This includes maintenance of the NOVA lots. The administrative costs of the program are not known. They are comingled with other department costs and not identified as line items.

Virginia DOT relies on a mix of federal, state, and local funds for its capital program. The federal funds are primarily FHWA CMAQ and STP. State funds are from the State Transportation Trust Fund and used as local match. The Trust Fund draws from four revenue sources:

- Motor fuels tax.
- Federal aid highway grants.
- Motor vehicle sales and use tax.
- Virginia sales and use tax.

For the current biennial, there is a $53.3 million shortfall in the Virginia DOT budget resulting from reductions in Trust Fund revenues. Reductions are in key areas such as transportation planning and research, highway system acquisitions, and construction. The shortfalls also affect other state agencies such as DRPT and are expected to continue into future years. As mentioned by the manager, these reductions and uncertainties lessen Virginia DOT's ability to match federal grants and hamper efforts to expand and develop the park and ride/intermodal commuter system.

The local funds that support park and ride facilities are from the budgets and general funds of local governments and transit agencies.

Programmed Projects. A review of the NOVA FY11–16 Six-Year Improvement Program shows $49 million is programmed for park and ride/intermodal commuter facilities. The federal share—composed of CMAQ and STP funds—represents $33.7 million. The non-federal share—composed of state and local contributions—represents $15.1 million. This is shown in Table 7.

1. B Public Authority and District Programs

The park and ride/intermodal commuter programs of the Bay Area Rapid Transit District (BART), the Denver Regional Transportation District (RTD), the Maine Turnpike Authority (MTA) and the Phoenix Valley Metro Regional Public Transit Authority (RPTA) are summarized here.

Table 7 Virginia Department of Transportation Northern District Six-Year Work Program—FY11–16 programmed park and ride/intermodal commuter facility projects (not including transit agency projects).

Park and Ride Project	Location	Total Cost	Federal Source	Federal Share	Non-Federal Source	Non-Federal Share
Route 234: 400-450 Space Commuter P&R Lot	Prince William County	$8,744,000	CMAQ Primary Formula STP-Reg	$6,603,000 183,000 200,000	VDOT Match	$1,757,000
Route 234: Park and Ride Lot Expansion	Prince William County	8,915,000	None	0	VDOT Partnership	8,915,000
Route 617: Backlick Road—North Park and Ride Facility	Fairfax County	4,294,000	CMAQ	3,355,000	Local Contribution	939,000
Route 643: Construct Park and Ride Facility	Loudoun County	7,779,000	CMAQ	6,751,000	Local Contribution VDOT Match	836,000 - Local 193,000 - VDOT
Eastern Loudoun: Park and Ride Lot	Loudoun County	885,000	CMAQ	708,000	VDOT Match	177,000
Engineering Proving Grounds: Saratoga Park and Ride Facility	Fairfax County	3,000,000	CMAQ	2,400,000	VDOT Match	600,000
Herndon: Monroe Park and Ride Lot	Fairfax County	5,144,000	CMAQ	4,640,000	None	None
Edwards Ferry Road: Lease of 150-Space Park and Ride Lot	Leesburg	765,000	CMAQ	605,000	VDOT Match	160,000
Lowes Island: Lease Commuter Parking Spaces	Loudoun County	280,000	None	56,000 224,000	VDOT Match STP-Regional	280,000
Springfield: CBD Commuter Parking	Fairfax County	9,250,000	CMAQ	8,000,000	VDOT Match	1,250,000
	TOTAL	**$49,056,000**		**$33,725,000**		**$15,107,000**

Source: Virginia Department of Transportation FY2011–2016 Six-Year Improvement Program.

1. B.1 Bay Area Rapid Transit District (BART)

BART is an independent agency created by the California legislature to provide interurban rapid transit in the metropolitan area surrounding the San Francisco Bay. The district manages a 104-mile, 43-station system within the counties of Alameda, Contra Costa, San Francisco, and San Mateo. It has a nine-member board of directors.

Overview. The BART Parking Program was established in 1971. Unlike most of the programs surveyed, demand for BART parking is acute, representing a 95 percent average occupancy. The program charges parking fees, ranging from $30 to $115 per month. There are 46,000 spaces in 32 lots. Two of the lots are leased from Caltrans.

- 55 percent of the spaces are fee spaces. The district charges a fee for their use.
- 24 percent of the spaces are free to the public.
- 17 percent of the spaces are monthly and daily reserved permit parking.
- 3 percent of the spaces are for BART employees.
- 2 percent of the spaces are fee spaces for the disabled and handicapped.

The program generates $12 million in revenue each year in parking fees.

Commuter amenities include lighting, security, bicycle parking, walkways, shelters, and benches. Users may also use the E-Z Rider Card which facilitates access to parking and transit services. There are no retail services. Attempts were made to provide video, laundry, and coffee services but they did not generate interest. BART is considering a car wash and detailing service. Reserved spaces for car pools and van pools are also being considered, as

well as a smart phone application for real-time tracking of train schedules.

According to the manager, success of the program is measured by public reaction. On a weekly basis, he says, the program services 250,000 vehicles and receives less than 20 complaints. The manager reports that the parking permit system and E-Z Rider card are also indicators of success. In the rare case of an underutilized lot, the BART marketing department promotes the lot to the public and offers free parking.

Staffing. The park and ride program is managed by two full time equivalent positions, Parking Administrator and Manager of the Customer Access Department.

Policy and Program Elements. To ensure scheduled and reliable bus access to and from its parking, BART coordinates quarterly with its transit operators: Contra Costa, AC Transit, and the MTA. When public funds are needed for facility improvements or expansions, BART participates in a collaborative process defined by the Metropolitan Transportation Commission (MTC), which is the MPO and the designated FTA grant recipient. BART capital projects are ranked and prioritized along with other regional projects, then listed in the Transportation 2035 Plan for the San Francisco Bay Area, which is the blueprint for the region's capital plans.

The program's shortfalls, according to the manager, are the shortage of parking spaces, the lack of staff to develop the car pool and van pool programs, and insufficient personnel and resources to make necessary and timely repairs. The manager also believes the requirement of board of directors approval for any program action or change is a constraint.

Funding. The principal sources of BART capital funds are FTA Section 5307 and Section 5309 formula funds. These flow to BART through the MTC. Other capital and operating sources are:

Federal Funds
- FHWA Surface Transportation Program (STP).
- Congestion Mitigation and Air Quality (CMAQ).

State Funds
- State Gas Tax.
- State Transit Assistance.

Local Funds
- Bridge Tolls.
- County Sales Tax.

BART Funds
- Parking and Passenger Revenue.

Programmed Projects. The most significant BART park and ride/intermodal commuter projects listed in the 2035 Plan are:

- Improve capacity at 43 BART stations—$32.5 million.
- Expand Union City Station to create intermodal rail station—$21.0 million.
- Establish express bus service and e-BART support network, including park and ride lots—$21.7 million.
- Extend BART from Fremont to Warm Springs, including 2,040 parking spaces—$890 million.

1. B.2 Denver Regional Transportation District (RTD)

The Denver RTD was created by the Colorado General Assembly as a political subdivision "to develop, maintain, and operate a public mass transportation system for the benefit of the inhabitants of the District" (Colorado Statute: Title 32: Special District, Article 9: Regional Transportation District Act. Section 32-9-107: Mass Transportation System, August 25, 2009, p. 10). The district encompasses Denver, Boulder, Broomfield, and Jefferson counties; the urbanized portions of Adams, Arapahoe, and Douglas counties; and a portion of Weld County. The district is governed by a 15-member board of directors.

Overview. The RTD Park and Ride Program was established in 1986. It has 26,000 spaces in 75 lots.

- 45 lots are owned by the RTD.
- 20 lots are leased from the state DOT.
- 10 lots are leased from private interests.

In 2009, the district initiated a new Parking Management Program. Fifteen of the lots are reserved for district residents who park free for the first 24 hours and then pay $1.00 or $2.00 thereafter, depending on duration. Non-district users pay $2.00 to $4.00 every 24-hour period.

There is no stated policy that defines or addresses underutilized lots. Commuter amenities include direct

bus and light rail connections, signage and messaging, parking attendants, ticket scanners, lighting, bicycle parking, some covered shelters, benches, and information kiosks. There are automated pay stations at each lot. All lots have security. Pedestrian walkways are provided at lots where parking and bus services are on opposite sides of the Interstate system. Retail services are available but, according to the manager, there is low use of the coffee stands and automated vending machines. Other commuter conveniences being considered are DVD rentals, ATMs, and a dry cleaning service. The district is also planning cellular phone applications for real-time bus tracking.

According to the manager, the program is successful because there is enough capacity to meet demand. He reports that the program generates high levels of transit ridership and reduces lane mileage. For the future, he believes more funding will be needed to build more facilities to meet future demand.

Staffing. There are three full time equivalent employees within the RTD Department of Planning and Development (engineering and systems planning unit) and the Department of Facilities (parking management unit) responsible for elements of the park and ride program. They represent one Manager and two Supervisors.

Policy and Program Elements. The district participates in discussions on future park and ride expansions with regional stakeholders representing the Denver Regional Council of Governments, the Colorado Department of Transportation, and local governments. Their agreements are memorialized in the 20-year Regional Transportation Plan. The projects are also listed in the RTD Six-Year Transit Development Plan, which is adopted by the board of directors. The requirement for board approval is perceived by the manager as a constraint to managing the program.

Funding. Revenue: According to its 2010 adopted budget, RTD receives over one-half of its capital revenue from local and private funds (30.3 percent) and federal carryover (26.3 percent). A local use tax is also levied by the RTD and represents 10 percent of total capital revenue.

Expenditure: The current park and ride program represents $10 million or 0.9 percent of the agency's 2010 capital expenditures (new and carry forward capital). Intermodal commuter and bus shelter facilities represent an additional $12 million in expenditures.

The largest capital expenditure, representing 80.3 percent of the program, is *FasTracks*—a $6.9 million, 12-year capital program supported by a voter-approved sales tax increase, debt issuance, federal capital grants, local government contributions, and public-private partnerships. *FasTracks* represents new commuter rail and light rail systems in nine corridors, bus rapid transit, an expanded park and ride system, and development of the Denver Union Station as a multimodal hub. When completed, the program will add 35 park and ride lots, representing about 17,500 new spaces.

Programmed Projects. The district's 2010 (non-*FasTracks*) park and ride projects represent $22.2 million. They are listed in Table 8, which shows the funding source for each project.

1. B.3 Maine Turnpike Authority (MTA)

MTA was created by the Maine Legislature to construct, manage, and operate a 109-mile toll highway from Kittery to Augusta.

Overview. The MTA Park and Ride Lot Program was established in 1970. It represents 1,155 spaces within 19 lots located within the turnpike corridor. Four of the lots are owned by Maine DOT. All parking is free. Average lot occupancy is 55 percent. Commuter amenities include lighting and security. Sixteen percent of the lots have bicycle racks and shelters. Underutilized lots are reviewed on a case-by-case basis. An example is the South Portland lot, which experienced low use. MTA made ingress/egress improvements but low usage persisted. MTA then asked the Go Maine Commuter Connections Program to educate the public on space availability at the lot. This resulted in slightly higher use.

The Go Maine Commuter Connections Program is administered by the Greater Portland Council of Governments and funded by both Maine DOT and MTA, which contribute $115,000 annually to the program. Go Maine promotes and educates customers about alternative transportation choices, including walk, transit, bicycle, and car-share options. The total number of registered commuters in the program is 7,612, which is a record high.

Table 8 Denver Regional Transportation District 2010 capital program—park and ride/ intermodal commuter elements.

No.	Project	Recommended 2010 Total Capital Sources		
		Local	Federal	Total
1	Intermodal Facility; City of Boulder	$3,971,829	$7,740,000	$11,711,829
			Sub Total	**$11,711,829**
2	P&R: Broomfield Relocation	5,897		5,897
3	P&R: Broadway Euclid	579,120		579,120
4	P&R: Cold Spring Driver Relief Kiosk	51,254		51,254
5	P&R: Colorado River Relief Station	103,200		103,200
6	P&R: 40th and Airport	89,914		89,914
7	P&R: Smoky Hill Road at Picadilly	169,442		169,442
8	P&R: I-25 and Broadway Structure	198,225		198,255
9	P&R: Longmont/Ken Pratt	1,146,069		1,145,069
10	P&R: Longmont/Kimbark Driver Relief Shelter	129,000		129,000
11	P&R: Parker Install Driver's Kiosk	22,797		22,797
12	P&R: Pine Junction	224,325		224,325
13	P&R: Stapleton	4,372,198	2,447,881	6,820,079
14	P&R: Montbello-Relief Kiosk	87,720		87,720
15	P&R: US-36 and McCaslin—Ped Bridge	280		280
16	P&R: US-36 and Reed Street—Mandalay Gardens	2,238		2,238
17	P&R: US-85 and 72nd Avenue—Driver Relief Drainage	62,012		62,012
18	P&R: US-85 and 72nd Avenue—Driver Relief Station	64,039		64,039
19	P&R: Table Mesa Structural Repair	10,751		10,751
20	P&R: Video Security System—Table Mesa	100,000		100,000
21	P&R: Wadsworth and Hampden Driver Relief Kiosk	17,749		17,749
22	P&R: Westminster Center East Driver Station	96,659		96,659
23	P&R: Westminster Center West Driver Station	63,466		63,466
			Sub Total	**$10,044,268**
24	Bus Shelters – 2006	4,201		4,201
25	Bus Shelters – 2007	3,734		3,734
26	Bus Shelters – 2008	88,758		88,758
27	Bus Shelters – 2009	131,871		131,871
28	Bus Shelters – 2010	76,200		76,200
			Sub Total	**$304,764**
			TOTAL	**$22,160,861**

Source: RTD 2010 Adopted Budget, Denver Regional Transportation District, pp. 200, 202, and 203.

MTA also subsidizes the ZOOM Turnpike Express commuter bus. Established in 1998, ZOOM service connects to two park and ride lots and runs express along the turnpike on weekdays. The service is cited as one reason for the recent construction of an overflow parking area at the Saco Park and Ride Lot. Because of increasing ZOOM commuters, MTA coordinated with Maine DOT and the city of Saco to open the overflow facility. The land is owned by MTA and leased to Maine DOT.

Staffing. The program is managed by one Planning Assistant. Five percent of her time is dedicated to administering the program. Her salary is paid from the MTA operating budget, which is supported primarily with turnpike tolls. This is also true of maintenance. Crews provide litter control, snow removal, and space stripping on an as-needed basis. Their work and costs are comingled with other maintenance functions and costs in the agency budget.

Policy and Program Elements. Success of the MTA Park and Ride Program, according to the manager, is defined by the average 55 percent lot utilization. The manager reports that the deficiencies of the program are the lack of funds for land acquisition and construction and the absence of flexible zoning that

would allow expansion of lots outside of turnpike boundaries. The abutting jurisdictions control zoning and perceive lots as traffic generators. They are not receptive to hosting them.

MTA is required to coordinate with Maine DOT, municipalities, and regional planning agencies in compliance with the 1991 Sensible Transportation Policy Act before making capital improvements, including park and ride lot expansions. The Sensible Act requires MTA to prepare, analyze, document, and discuss a full range of alternatives before proposing any new facilities. The process and steps for coordination are further defined in Rules for the Sensible Transportation Policy Act, which is administered by Maine DOT. MTA is required—by law—to achieve consensus from stakeholders before finalizing capital improvement plans.

In addition to Sensible Act requirements, MTA meets quarterly with the Maine DOT Park and Ride Manager to coordinate their shared responsibility for the state park and ride program.

Funding. MTA relies on revenue generated from tolls and bonds. The manager estimates that $100,000 is allocated annually for park and ride lot maintenance. Funding for improvements is considered on a project-by-project basis. An example is the Wells Regional Transportation Intermodal Center, built in 2003. The 1,600 ft^2, handicapped accessible center provides commuter amenities such as vending machines, ATM service, pay phones, benches, newspaper machines, and bicycle parking. The center has a 201-space commuter lot for access to Vermont Transit (bus) and taxis, limousines, trolleys, an airport shuttle, and a daily bus to the Connecticut Foxwoods Casino. Trains at the center provide passenger service between Portland and Boston.

Before 2003, MTA initially considered using just its capital funds to modestly expand the Wells Center. After discussion with Maine DOT and the town of Wells, it was agreed to use MTA capital funds to attract federal funds. MTA contributed $1.4 million, which matched $1.2 million in CMAQ funds. The federal grant was administered by the Northern New England Passenger Rail Authority. Through the agreement, the Town of Wells assumes all costs for operating the center.

Programmed Projects. There are no immediate park and ride/intermodal commuter projects programmed by the MTA.

1. B.4 Phoenix Valley Metro Regional Public Transit Authority (RPTA)

The Phoenix Valley Metro RPTA is a public authority responsible for public transit services in Maricopa County. The RPTA is a membership organization. Cities agree to join the RPTA in the provision of transit service as a unifying brand name. The three largest bus operators are the cities of Phoenix and Tempe, and the RPTA. Each city appoints a representative to the RPTA board of directors.

Overview. The RPTA Park and Ride Program was established in 2000. There are 7,540 spaces in 49 lots. Twenty-four of the lots are owned by local jurisdictions and 25 by private interests. All of the lots are free to the public. Six percent of the spaces are designated for handicapped parking.

Commuter amenities include connections to other modes, intelligent signing and messaging, lighting, security (including guards and cameras), bicycle parking, bicycle lockers, pedestrian walkways, shelters, benches, information kiosks, and shade canopies. Retail services are available to commuters at the private lots.

Average lot occupancy is not known. If there is persistent underutilization, the RPTA increases the number of stalls that are covered with canopies. The canopies protect vehicles from the sun and entice motorists to use the lots.

Staffing. One employee, a Senior Management Analyst, dedicates 20 percent of his time to the park and ride program. No staff is assigned for maintenance.

Policy and Program Elements. According to the manager, local funding is an issue in the current economy. The RPTA board, he says, is comprised of mayors and city managers "who struggle with their own budgets."

RPTA commissioned the 2008 Park and Ride Reprioritization Study, which offers guidelines and recommendations on managing the regional park and ride system. One key recommendation is for the RPTA to cap its cost for constructing a new park and ride at $4.5 million in 2008 dollars. Any cost above the cap would be paid by the host jurisdiction.

Funding. Federal funds do not pass through the RPTA. The agency is funded with a ½ cent regional sales tax for roadways and transit, called the Public

Table 9 Phoenix Valley Metro Regional Public Transit Authority operating and capital budget FY09–10 (park and ride/intermodal facility elements).

Operating Budget—Planning Department—Regional Park and Ride Planning—Project 3360	
Revenues	**Dollar Amount**
4000 – Regional Area Road Funds	$0
4360 – Local Match – Scottsdale	$55,000
4366 – Local Match – Surprise	$150,000
Total Revenues	**$205,000**
Expenditures	
7200 – Consultants (direct)	$205,000
Total Expenditures	**$205,000**
Project Description Site selection and environmental documentation for three park and ride lots: Arrowhead Park and Ride/Transit Center; Desert Sky Park and Ride/Transit Center; 59th Avenue and Laveen Park and Ride	
Capital Budget—Passenger Facilities—Park and Rides—Project 9220	
Revenues	**Dollar Amount**
4997 – Transfer in, from Debt Service Fund	$500,000
3300 – Undesignated Fund Balance Applied	$3,236,564
Total Revenues	**$3,736,564**
Expenditures	
7901 – Lead Agency Public Transportation Fund Disbursements	$3,033,428
9900 – Capital Contingency (Public Transportation Fund)	$703,136
3105 – Reserved for Capital Assets	$0
Total Expenditures	**$3,736,564**
Project Description Sub Project 922001—East Buckeye—Construction Sub-Project 922004—Phoenix (Desert Sky)—Pre-design Budget includes a capital contingency of 5% of total programmed expenditures. Lead agency federal funds not included because they do not pass through Phoenix Valley Metro.	

Source: Adopted Operating and Capital Budget, FY 2010/2011, Phoenix Valley Metro.

Transportation Fund (PTF). The RPTA also uses PTF operating funds for planning.

The RPTA FY09-10 operating budget for its park and ride program is $205,000. The capital budget is $3.7 million. This is shown in Table 9.

CHAPTER 2 KEY FINDINGS AND BEST PRACTICES

This chapter summarizes the findings of this research. It begins with key findings from the literature search followed by key findings from the program surveys. The chapter concludes with the best practices of the surveyed programs.

2. A Findings from the Literature Search

A literature search on current program methods and practices was conducted from June 21, 2010, to July 28, 2010. It involved online and Internet review of international, national, state, regional, and local periodicals, publications, and articles. It also involved searches of federal, state, regional, county, and local agency websites. A total of 20 research portals and websites were accessed. This resulted in the collection and review of 84 periodicals, publications, and articles. From this collection, 64 documents were selected that were considered most relevant. Key findings from the literature search are summarized here.

2. A.1 Limited Information

There is limited information on the administrative, operational, and legal processes involved in the long-term care, development, and financing of park and ride/intermodal commuter facilities. Current research is mostly silent on practices for expanding commuter services and funding for long-term maintenance.

Current literature focuses primarily on the following aspects:

- Standards for the physical design and initial siting of park and ride facilities.
- The social, economic, environmental, and community benefits of park and ride programs.
- Techniques in the marketing and promotion of commuter services and park and ride programs.
- The inventories of state, regional, county, and local park and ride programs, specifically the number of lots and spaces, as well as their locations.
- Methods for estimating the future demand and utilization of park and ride facilities.

2. A.2 Leasing Agreements and User Fees

One notable management practice documented in the literature is the use of leasing agreements to eliminate or lessen the cost of facility maintenance and improvements. Leasing takes several forms, such as the leasing of state property to regional transit authorities or local governments or the leasing of transit authority property to private interests to stimulate mixed-use development. The process, terms, and legal instruments used for these agreements vary by agency. Another less documented but increasing practice is the imposition of user fees on formerly free commuter parking spaces. There is limited research in this area but a review of several government websites found a number of new policies, advising that user fees were necessary to cover the cost of maintenance.

2. A.3 Emerging Technologies

One less documented but emerging area of research describes "smart card" and "smart park" technologies, such as real-time parking information systems. These technologies are either in place or being tested across the country, mostly at facilities characterized by chronic overcrowding and acute demand. There are a number of technical reports that describe these applications, but there is limited information on their long-term costs and maintenance requirements.

2. A.4 Alternative Financing

Another area of emerging research examines creative and alternative financing, which involves the leveraging of federal funds, private capital, or both to modernize and upgrade public transportation infrastructure. There is limited discussion on how this applies to smaller components of the network such as park and ride facilities. However, there are several active alternative finance programs, such as the Virginia Public-Private Partnership (PPP), which are attracting interest.

2. A.5 Agency Websites

It was discovered during the literature search that the best resources for examining current parking management practices are the websites of transportation agencies and transit authorities. Here, initiatives captured in an agency's transportation policies and plans and its capital improvement program offer varying levels of insight and detail on efforts to increase the viability and presence of commuter parking. The websites offered enough information to confirm the possibility of several best practices and helped to identify candidate programs for study.

2. B Findings from the Program Surveys

The researchers conducted 13 telephone surveys with park and ride program managers from August 2, 2010, to October 28, 2010. The telephone surveys covered 12 programs. Eight of the agencies (62 percent) represent state DOTs. Two represent transit authorities, one represents a transit district, one represents a transportation district, and one represents a turnpike authority. A synopsis of program survey findings is provided here.

Year Started. All of the programs except two were initiated prior to 1990. The New Mexico DOT and the Phoenix Valley Metro Regional Public Transit Authority (RPTA) programs started in 2000 or later. Most of the programs (58 percent) were created through legislative mandate.

Spaces and Lots. The total number of park and ride lots varied by program from 19 to 326. California DOT (Caltrans) has the most lots (326). The Maine Turnpike Authority (MTA) and the New Mexico DOT have the least lots, 19 and 24, respectively. The Virginia DOT has the greatest number of park and ride spaces (estimated at 61,835) compared to the MTA, with 1,155 spaces.

Parking Fee. Only two of the agencies—the Bay Area Rapid Transit District (BART) and the Denver

Regional Transit District (RTD)—charge a direct parking fee. The latter permits limited free parking for district residents. The New Mexico DOT has indirect fees, representing user fees for bus, rail, and shuttle services to the state park and ride facilities.

Average Occupancy. Average lot occupancy rates ranged from 40 to 95 percent. The agencies that charged parking fees have the highest occupancy rates.

Number of Staff. For most of the agencies, the park and ride management function is administered by limited staff. Agencies with district offices had the greatest number of staff. For example, Caltrans has 13 Park and Ride Coordinators, one in its central office and one in each of its 12 districts. Similarly, the Florida DOT has eight staff, one in the central office and one in each of the seven districts. For the remaining programs, staffing averaged 1.17 employees per program. In most cases these are not full time equivalents, with employees dedicating about 14 percent of their time to the program.

In-House Inventory. All of the agencies have some form of park and ride lot inventory in either a spreadsheet format or annual report. Not all of the inventories are current.

In-House Policy. Most of the agencies have informal policies or procedures that govern their programs. The Florida DOT has a formal and comprehensive set of policies and procedures. Caltrans has a park and ride resource guide. The Phoenix Valley Metro RPTA and Maine DOT have commissioned studies that advise on next steps.

Coordination with Others. There is little coordination-of-effort within the agencies for their current park and ride programs. However, there is considerable coordination and cooperation with local, county, regional, and state stakeholders for future park and ride/intermodal commuter facilities. These discussions usually follow the metropolitan and/or regional planning decision-making process which requires consensus with stakeholders on a list of project priorities. These are then programmed through a multi-year work plan, a capital improvement plan, and/or the State Transportation Improvement Program (STIP).

How to Define Success. Most of the managers define the success of their programs by lot occupancy or utilization rates. Twenty-five percent of the agencies set the success goal at 60 percent, which was usually achieved or exceeded. Two agencies, the MTA and Maine DOT, consider not only lot occupancy, but also other factors in determining success. This includes a measureable decrease in vehicle miles traveled on state roadways, the initiation of express bus service to the lots, and commuter education and promotional programs.

Underutilization. When lots are determined to be underutilized, three of the programs (23 percent) initiate marketing to inform the public of space availability. Two of these agencies offer free bus service to or from the lots. Two agencies place canopies over stalls in the underutilized lot. According to Phoenix Valley Metro RPTA, sun protection in the harsh summer climate is an incentive to users. The other agencies either have no underutilization policy or address the issue on a case-by-case basis.

Legal/Policy/Program Constraints. Most of the managers (66 percent) say there are no legal or policy constraints to operating their programs. Two of the managers report that any program action must be approved by the agency's board of directors. This is perceived as a constraint. Another manager cites the lack of enforcement of laws governing the use of the lots.

Replication Potential of Program. Most of respondents (75 percent) believe that their park and ride programs can be replicated by other states. They cite the simplicity and straight-forwardness of managing park and ride stalls. Two respondents had no opinion or were not sure. One manager reported that his program could not be replicated because the agency is a regional authority, with a different organizational form and mission than a state DOT.

Typical Budget. Of all responses, the program budget response was the most difficult to interpret, in part because several of the managers were not knowledgeable on how aspects of their programs are funded. In most cases, there are no line items in the agency budgets dedicated to the administration and maintenance of park and ride/intermodal commuter facilities and programs. These functions and costs are comingled with other agency operations and administrative costs and are not separated out. Capital expenditures and budgets for future facilities were

easier to decipher. This information is typically published in the agency multi-year capital improvement plan.

Primary Fund Sources. Several of the managers were unable to explain the primary funding sources used to support their programs. In a review of each agency's program budget and multi-year capital program, it was determined that all of the agencies, except one, rely heavily on federal aid. The agencies typically match federal funds with state or local funds. A list of the sources used by the agencies is provided here. These and other sources and techniques are discussed more fully in Chapter 3, Section 3.C: Funding Sources and Innovative Financing Techniques.

- Federal Sources.
  - Federal Highway Administration (FHWA)
    - Congestion Mitigation/Air Quality Program (CMAQ),
    - Pavement Management,
    - State Planning and Research (SPR),
    - Surface Transportation Program (STP), and
    - Transportation Enhancements (TE).
  - Federal Transit Administration (FTA)
    - Section 5307—Urbanized Area Formula Program,
    - Section 5309—Major Capital Investments (New Starts and Small Starts),
    - Section 5311—Formula Grants for Other Than Urbanized Areas,
    - Section 5311(b)(3)—Rural Transit Assistance Program, and
    - Section 5311(c)—Public Transportation on Indian Reservations.
  - American Recovery and Reinvestment Act (ARRA).
- State Sources. State funds in support of park and ride/intermodal commuter programs are drawn from a variety of revenue sources. These funds are typically categorized, for example, as a State Transit Assistance Account or Public Transportation Account. The categorizations vary by state. The most common revenue sources used by states (to support the programs of the surveyed agencies and to match federal grants) are listed here.
  - Gas Tax.
  - Sale Use Tax.
  - Bond Proceeds.
  - State Infrastructure Bank (SIB) Loan.
  - (Federal) Grant Anticipation Revenue Vehicle (GARVEE) Loan.
  - (Federal) Transportation Infrastructure and Innovation Act (TIFIA) Loan.
- Local Sources. The local sources of support—also used as match to federal or state grants—are typically drawn from either a local transit agency or local government capital or operating fund. Local funds may also represent bridge tolls or a voter-approved sales tax dedicated to a specific transportation improvement. The local contribution is usually tied to a specific capital project.
- Agency Sources. Agencies that generate their own revenue have the option of allocating a portion of parking or fare revenue to the project or program. The agency may also have the authority to levy local taxes or issue bonds.

Program Issues. When asked to identify program shortfalls or issues, most of the managers (62 percent) cited the need for additional funding. They believe funding of park and ride facilities is a low priority for their agencies. Other responses included "parking supply shortage," which was expressed by BART; the authority is experiencing an acute demand for its spaces. The MTA cited "acquiring land" because it cannot build outside of its highway corridor, and Maine DOT cited public outreach and education. The Virginia DOT cited "inventory and program management" as a critical issue. The department plans to hire a consultant to update its inventory, strengthen program policies and procedures, and assess the demand for future facilities statewide.

Innovative Management. Management and program innovations determined by research are discussed in Section 2.C, "Best Practices."

Customer Amenities. All of the surveyed programs provide user amenities. "Bus Shelters and Benches" are the most common, provided by 92 percent of the programs. Other amenities include:

- Security (83 percent).
- Lighting (83 percent).
- Connections with Other Modes (67 percent).
- Bicycle Parking (67 percent).
- Retail Services (50 percent).
- Parking/Ticket Attendant (42 percent).

- Pedestrian Walkways (33 percent).
- Information Kiosks (25 percent).
- Intelligent Signing/Messaging (17 percent).

2. C Best Practices

A best practice may be defined as a discreet management action that advances the objective and purpose of a program and results in a successful program outcome. For this research, a best practice was determined by applying criteria typically used to evaluate programs that serve the public. Three categories were evaluated: program administration, program development, and program operation. The surveyed programs were rated based on their responsiveness in each category.

2. C.1 Evaluation Criteria

The category of program administration represents how the program is managed and covers elements such as goals and policies, staffing, assets, program needs and budget sources. Program development represents activities that advance the planning, promotion, and expansion of the program. Program operation represents operational features such as maintenance, security, enforcement, and amenities. These program categories and their elements are shown in Table 10.

The evaluative criteria in Table 10 were applied to each surveyed program. A rating, based on the program's compatibility or responsiveness to the functional elements, was then assigned, as follows:

1 = Element featured in program and considered a best practice.

2 = Moderate or limited evidence of element in program.

3 = Element not included in program.

The ratings for all of the surveyed programs are shown in Table 11. The "1" rating indicates that execution of the element enabled the program to achieve its objectives and may be considered a best practice. Because the purpose of research is to highlight best practices that may be replicated by other state DOTs, only elements with "1" ratings were considered.

2. C.2 Application of Evaluative Criteria

Eight of the 12 surveyed programs received the "1" rating in certain areas. The programs are BART, Denver RTD, Florida DOT, Maine DOT, MTA,

Table 10 Criteria for rating the surveyed park and ride programs.

Function	Element	Definition
Program Administration	Goals and Policies	Program administrative methods are documented and easily understood
	Program Staffing	Staffing and manpower levels satisfactorily address program requirements
	Asset Inventory	Program assets are well documented
	Program Needs	Program needs are understood and strategies are derived to address them
	Budget and Revenue Source	Program costs are quantified, budgeted, and aligned with viable funding sources
Program Development	Goals and Policies	Program development goals and policies are documented and easily understood
	Funding	Program is adequately funded
	Amenities	Program amenities strengthen the viability of the program
	Interagency Coordination	Program activities and objectives are coordinated with area or regional stakeholders
	Capital Improvement Program	Program CIP is well defined and prioritized
Program Operation	Goals and Policies	Program operation goals and policies are documented and easily executed
	Fee Collection	If permitted, program fees match demand and costs
	Security and Enforcement	Program facilities are safe for public use
	Maintenance	Program assets are regularly maintained
	Technology	Technology is applied to improve efficiency

Table 11 Ratings of the surveyed park and ride programs.

ELEMENTS	BART	Caltrans	Denver RTD	Florida DOT	Florida DOT District 6	Maine DOT	Maine Turnpike	New Mexico DOT	Rhode Island DOT/ Public Transit Authority	Phoenix Valley Metro	Virginia DOT	Virginia DOT Northern District
Program Administration												
Program Goals and Policies	3	3	2	**1**	**1**	2	2	2	3	3	2	2
Program Staffing	3	2	2	2	2	2	2	2	2	3	2	**1**
Asset Inventory	2	2	**1**	2	2	2	2	2	2	2	2	2
Program Needs	2	2	2	2	2	2	2	2	2	2	2	2
Budget/Revenue	2	2	2	2	2	3	2	2	2	2	3	2
Program Development												
Goals and Policies	3	2	2	**1**	**1**	2	2	2	2	2	2	2
Funding	**1**	2	2	2	2	**1**	2	2	2	2	2	2
Amenities	2	2	2	2	2	2	2	2	2	**1**	2	2
Interagency Coordination	2	2	3	2	2	**1**	**1**	**1**	2	2	2	**1**
Capital Improvement Program	2	2	2	2	2	2	2	2	2	**1**	2	2
Program Operation												
Goals and Policies	3	2	2	**1**	**1**	3	2	2	2	3	3	2
Security/Enforcement	2	3	**1**	2	2	3	2	2	3	2	2	2
Maintenance	2	2	2	2	2	2	2	3	2	3	3	2
Technology	2	3	**1**	2	2	3	3	3	3	2	3	3

1 = Element featured in program and considered a best practice.
2 = Moderate or limited evidence of element in program.
3 = Element not included in program.

Phoenix Valley Metro RPTA, and Virginia DOT—Northern District. Their best practices are discussed here (see Table 14 for additional information).

2. C.2.a BART. The BART program received a "1" rating in program development/funding. The agency received this rating because of its creative method for generating program funds and managing lot utilization. The Customer Access staff, responsible for the program, convinced the BART board of directors that a fee structure for parking was beneficial to the program in managing demand. This was a departure from past policy that established free parking at all BART stations. The fees were imposed to discourage use of lots with heavy demand and to encourage parking at locations with available spaces.

The parking fees, which are market based, range from $30 to $115.15 per month. In the initial stage of the program, a parking fee of $63 per month or $3 per day was charged for all stalls based on a working month of 21 days. Each month BART reviews the number of monthly parking permits purchased. If the number is less than 10 percent, the fee is $42 per month or $2 per day, a reduction of $1 per day. If the number is greater than 10 percent but less than 25 percent, the fee remains $63 per month or $3 per day. If the number of parking permits is greater than 25 percent, the fee is increased to $84 per month or $4 per day. A $30 monthly fee is assigned to lots that are underutilized. The $115.15 monthly fee is for those experiencing high demand. This approach balances demand and encourages greater use of properties with least demand. Moreover, the fee program generates about $12 million per year in revenue.

The BART parking fee program is applicable to state park and ride programs in that it manages lot utilization where parking demand exceeds capacity. Further, the program generates revenue that may be used to support lot development, management, and maintenance.

2. C.2.b Denver RTD. The Denver RTD rated a "1" in program administration/asset inventory, program operation/security and enforcement, and program operation/technology.

Asset Inventory. Although all of the surveyed programs have some form of inventory, the Denver RTD offers the best example in spreadsheet format. The data fields include:

- Name of lot;
- Number of spaces;
- Percent utilization;
- Lot address;
- Lot amenities—bike racks/lockers, bus shelters, benches, and ADA provision;
- Lot ownership;
- Type of transit service to facility;
- Estimated patronage by district and non-district; and
- Financial information on projected revenue, estimated cost, and net revenue.

The data covers all of the park and ride lots managed by the agency. Percent utilization and patronage are collected on a daily basis. Annually the data is summarized to estimate program revenue to support facility maintenance and operations.

The inventory serves as a model that may be applied to any state park and ride program and may be enhanced with the addition of other data fields such as the date and time of lot maintenance. The information aids in the preparation of annual or biennial progress reports, the identification of program shortfalls and needs, and the assessment of services and amenities. It is also a helpful tool for determining future capital improvements and upgrades. For state programs that do not charge for parking, the RTD data fields on projected and net revenue would not apply and may be eliminated.

Security and Enforcement. The Denver RTD park and ride program is rated "1" in security and enforcement because of its methods for monitoring and enforcing program policies. A new management policy was initiated in 2009 at 34 of the 75 lots. The purpose of the new policy is to maintain an accurate inventory of park and ride assets, to assess lot utilization, and to establish fees based on the origin of the users and their duration of stay. The origin of the user is particularly important because the lots are intended for residents living in the RTD. Those residing outside of the district must pay for lot usage, whereas district residents only pay after a 24-hour parking duration.

Enforcement is performed by attendants driving through the lots with a camera mounted to the vehicle and connected to a computer which, through a geocoding process, identifies whether the vehicle is registered to a district resident. If residency is outside the district, the computer produces a beep which alerts the attendant and the vehicle is cited.

In addition to parking enforcement, one-half of the RTD lots have cameras and the rest have real-time enforcement. This approach enabled RTD personnel in 2009 to conduct 3,476 video investigations of customer service complaints, ADA issues, liability claims, and security concerns. In the first 6 months of 2010, 2,800 investigations were conducted.

This approach is applicable to state DOTs with park and ride program policies relating to prioritized use based on geographic origin, variable parking pricing, and facility security or surveillance.

Technology. The Denver RTD program also rated a "1" for program operation/technology. The agency applies cutting-edge technology in the following areas:

- Use of cellular phone technology to access the Internet for retrieval of real-time bus schedules and payment of parking.
- Use of automated pay stations that accept various forms of payment.
- Use of Geographic Information Systems (GIS) to locate the residence status of parked vehicles based on license plates.
- Use of computer technology to interface with digital cameras to read and interpret a license plate.
- Use of video technology to investigate abnormal behavior.

The technologies reduce manpower requirements, improve user access to lots resulting in higher utilization, improve the enforcement of parking lot policies, and assist in the collection of fees.

2. C.2.c Florida DOT. The Florida DOT rated a "1" in program administration/goals and policies, program development/goals and policies, and program operation/goals and policies. The department has two instructive documents that explain the goals, objectives, procedures, and organization of its park and ride program. These goals, objectives, and

organizational features are captured in the document *Park & Ride Lot Program, Topic No. 725-030-002-f,* issued May 14, 2001. The roles and responsibilities of the central office and each district are explained, as follows:

Central Office Role

- Maintain communication with district offices.
- Develop program policies and procedures.
- Monitor compliance.
- Develop, maintain, and publish the *State Park and Ride Lot Planning Handbook.*
- Maintain the State Park and Ride Facilities Inventory.
- Provide technical assistance to districts.

District Office Role

- Maintain communication with the central office on program status and implementation.
- Establish and maintain communication with local transit systems, commuter assistance programs, Transportation Management Associations/Organizations, and others interested in developing park and ride facilities.
- Develop and document park and ride facilities in accordance with established procedures.
- Develop regional or district-wide park and ride plans or lists.
- Assist Metropolitan Planning Organizations (MPOs) and transit systems in the development of park and ride plans.
- Ensure implementation and promotion of facilities in coordination with the District Commuter Assistance Program.
- Plan and implement the state-funded program, including coordinating with those responsible for design, construction, right of way acquisition, promotion, and maintenance of facilities.
- Assist transit systems and local governments in the planning and implementation of locally initiated park and ride lots.
- Provide funds to contract with local agencies for the planning, design, and construction of park and ride lots.
- Prepare plans, prepare contracts for Florida DOT authorization, manage, and monitor park and ride facility development by other public agencies under the terms of a Joint Participation Agreement (JPA).
- Monitor and evaluate all park and ride lots in which state funds are utilized.
- Report annually on occupancy levels.
- Provide grants to local governments for the project phases of park and ride facilities including those associated with promotion.
- Provide technical assistance to local governments.
- Ensure coordination with corridor and special lane planning.

The policy document also explains how facility maintenance, inspections, and inventories should be undertaken and performed. A sample of several directives is provided here:

- Maintenance is coordinated between the District Public Transportation Office and the District Maintenance Office. If the facility is a shared-use operation, or operated by others, the department negotiates and executes a maintenance agreement with the party sharing or operating the facility.
- If the facility is owned and operated by others (e.g. church owns property and agrees to joint use agreement), a formal, written, executed Maintenance Agreement is provided to the department.
- Facilities are physically inspected at least twice a year. Documentation of the inspections and corrective measures taken are maintained in the district office.
- The district submits a report to the central office by the end of the tenth month of each fiscal year indicating dates inspected and average usage for each facility.
- Facilities failing to meet minimum occupancy standards for a period of 1 year may be closed.
- Any facility operating at a level of 95% or greater is a prime candidate for expansion.

The second Florida DOT document is the *State Park & Ride Lot Program Planning Manual,* September 1996, as amended April 2001. Here methods for inspecting, evaluating, assessing and expanding park and ride facilities are outlined as guidance for district personnel. The manual explains:

- How to evaluate the performance of park and ride lots.
- Planning methods for the implementation of park and ride facilities.
- Processes for facility development and site selection.
- Methods for estimating demand and facility size.

Table 12 Florida Department of Transportation park and ride facility performance evaluation input.

Data Element	Evaluation Type	Collection Frequency	Unit of Measurement
Spaces by type*	Capacity	On file 2 to 4 times annually	Number
Parked vehicles by space type	Usage	2 to 4 times annually	Number of vehicles
Illegally parked vehicles	Capacity	2 to 4 times annually	Number of vehicles
Pavement condition	Maintenance	Semiannually	Extent/severity of cracking, potholes, raveling, patching, rutting, spelling, etc.
Traffic control device inventory	Safety	Same frequency as counts	Type and condition both on- and off-site
Complaints	Capacity, safety, maintenance, illegal parking	Continuing, summarized annually	Number by type
Accidents related to facility	Safety	Once per year	Accidents by type
Adjacent property inventory	Expandability	Annually	Land use type and amount
Accessible transit service	Service adequacy	Once per year or as required	Type(s) of service, stop locations

*Space types include long-term, short-term and handicapped.
Source: *State Park & Ride Lot Program Planning Manual,* September 1996, as amended April 2001, p. 10-3.

- External and internal conceptual design of park and ride facilities.
- Procedures for assessing impacts of park and ride facilities.
- Economic analysis and park and ride project justification methods.
- Park and ride program performance measures.
- Park and ride program promotion methods and techniques.

For example, the planning manual identifies the initial steps for inventorying park and ride assets, summarized here in Table 12.

The planning manual recommends various corrective measures to improve the performance of low or marginally utilized park and ride facilities, summarized here in Table 13. The planning manual offers formulas and calculations for measuring the reduction in vehicle miles traveled (VMT) attributable to a park and ride facility, explained here.

VMT REDUCTION. The VMT reduction value is used to compute a number of other performance measures including those related to user cost savings, fuel

Table 13 Florida Department of Transportation conditions for corrective actions at marginally operating park and ride facilities.

Action	Potential Usage Increase	Conditions
Added Transit Service	½ to 1% increase per 1% improvement in frequency. Potentially 100% increase with new service.	Market area supportive of transit. Area planned for express service. Congested access to major destination area. Existing headways greater than 15 minutes.
Access Improvement	50% increase per 5 minute improvement in access times.	Congested access roads to park and ride facility. Heavily traveled corridor with major destination area. Site is visible and otherwise appears attractive. Market area not serviced by other park and ride facilities.
Transit Amenities	Indeterminable, probably slight.	Other improvements planned for facility.
Improved Security	Slight unless full-time security is provided.	Security problem exists. Peripheral facility adjacent to area with undersupply of parking.
Promotion	Less than 10%.	In conjunction with special transit promotion programs. Characteristics of origin market influence area supportive of park and ride facility. Congested commuting corridor.

Source: *State Park & Ride Lot Program Planning Manual,* September 1996, as amended April 2001, p. 10-11.

consumption, vehicle emissions, value of accidents, and fatalities. The approach begins with totaling the number of parked vehicles by lot type. These totals are then multiplied by the average trip lengths from lot to destination for each lot type. This product is then converted to an annual amount using the annualization factor for each lot type. The formula for this computation is as follows:

$$VMTi = 2 * Parkedi * Li * Afaci$$

$$\text{System VMT reduction} = \Sigma I = 1, \text{lot types } VMTi$$

where:

VMTi = VMT reduction for lots of type i
Parkedi = Number of parked vehicles in lots of type i
Li = Average lot-to-destination distance for lot type i
Afaci = Annualization factor for lot type i

The planning manual also offers methods for measuring user cost savings, summarized here.

USER COST SAVINGS. The computation of user cost savings consists of calculating the savings in vehicle operating costs. The approach does not consider costs saved through avoidance of parking fees or costs incurred such as transit fares and parking fees. The approach is simply to multiply the annual VMT reduction for each lot type as computed by the above method by the average operating cost. The formula for this computation is as follows:

$$Costi = VMTi * Opcosti$$

$$\text{Systemwide User Cost Savings} = \Sigma i = 1, \text{lot types } Costi$$

where:

Costi = Annual cost savings for users of lot type i
VMTi = Annual VMT reduction for lots of type i
Opcosti = Average vehicle operating cost for vehicles parked at lots of type i

From the perspective of a state DOT wishing to establish or strengthen its program goals, objectives, policies, and procedures, the Florida DOT example is instructive and noteworthy. The agency policies provide structure and context, purpose and intent, an organizational framework, and methods for achieving expected program outcomes. This level of detail, guidance, and instruction was not apparent in the other surveyed park and ride lot programs.

2. C.2.d Maine DOT/MTA. The Maine DOT program rated a "1" in program development/funding. As explained by the manager, biennially the department receives a $1.2 million federal CMAQ grant for the purpose of planning and improving its park and ride program. While the manager was unable to explain the history and circumstances of this arrangement, it is deemed a best practice because it provides a reliable funding source for the program. The federal funding establishes a baseline and enables the department to consider requests from local or regional interests on where and when facilities should be built or expanded. Moreover, the funding establishes parameters on how much can be accomplished within the 2-year time frame and what will be required for local match. Maine DOT meets the 20 percent local match through a variety of sources such as state highway funds, state bonds, and cash or in-kind contributions from local municipalities. Each circumstance differs.

Maine DOT and the MTA together rated a "1" in program development/interagency coordination. They received this rating because of their support of commuter bus and commuter education services. The Go Maine Commuter Connections Program is administered by the Greater Portland Council of Governments and funded by Maine DOT and MTA, which contributes $115,000 annually to the program. Go Maine is an Internet site that encourages and educates people about alternative commuter choices. The total number of registered commuters in the program is 7,612, which is a record high. The agencies also subsidize the ZOOM Turnpike Express commuter bus. Weekday ZOOM buses connect to two park and ride lots and run express along the turnpike. The service is cited as one reason for the construction of overflow parking at the Saco Park and Ride Lot, to accommodate the increasing number of ZOOM commuters.

From the perspective of a state DOT, establishing a partnership with the U.S. Department of Transportation—which results in federal funding within a fixed time interval for the specific purpose of improving the state park and ride system—is considered a best practice. Moreover, the Maine DOT and MTA partnership has produced a successful commuter bus operation and commuter education and

membership program, which results in a higher awareness and usage of state park and ride facilities. This is also a noteworthy best practice.

2. C.2.e Phoenix Valley Metro RPTA. The Phoenix Valley Metro RPTA is rated a "1" in program development/user amenities and program development/capital improvement program (CIP).

User Amenities. The Phoenix Valley Metro RPTA amenities attract park and ride users. When a lot is underutilized, the agency responds by increasing the number of shade canopies at the lot. It provides shade canopies in summer months to increase lot utilization. Another useful amenity is the provision of retail services within or near the park and ride facility. In a study conducted by the city of Phoenix, it was determined that 35 percent of park and ride users shop at the retail service closest to their lot. When negotiating shared use agreements with retail managers, the RPTA presents these findings. This secures additional stalls, attracts new users, generates customers for retailers, and activates idle parking stalls. Of course, this only works in retail centers with a parking supply above the code required amount. According to the RPTA, most of the retail centers have parking supply above code.

From the perspective of other state DOTs, the use of the shade canopies is instructive. RPTA designed an amenity unique to its environment and market sector. This suggests that a successful program should consider uniquely designed amenities as factors to attract users. This may vary by geographic location. For example, whereas RPTA offers shade canopies, an Anchorage, Alaska, program may offer electrical outlets for engine block heaters.

RPTA has also identified a market niche. With over one-third of the Phoenix area park and ride lot users prone to shop in retail centers nearest to them, the placement of stalls within retail centers simultaneously generates new patrons for the retailers and new users of the park and ride program.

Capital Improvement Program (CIP). The RPTA rated a "1" in program development/CIP program. The agency has a 20-year capital program that was developed in 2002 to construct 13 new park and ride lots. The program of improvements was approved by area voters as a 1/2 cent regional sales tax. RPTA has prepared maps of each facility, tables summarizing the year of construction, and funding schedules representing $4.5 million for each planned facility. Any cost above the budgeted amount is borne by the locality in which the facility is located. The CIP was recently re-evaluated with a Re-Prioritization Study conducted in 2008. The study updates the CIP and generates a list of new policies for improved implementation of the plan.

The RPTA CIP process is a good example for state DOTs on the importance of preparing a long-term capital plan with costs, identifying a funding mechanism to accomplish the plan, and revisiting and updating the plan to ensure its viability over time.

2. C.2.f Virginia DOT—Northern District (NOVA). The Virginia DOT—Northern District (NOVA) comprises the most densely populated and heavily traveled counties in the commonwealth. They are Arlington, Fairfax, Loudoun, and Prince William counties. The NOVA park and ride program rated a "1" in program administration/program staffing and program development/interagency coordination.

Program Staffing. Staffing for the NOVA park and ride program is represented by one Senior Transportation Engineer dedicating 50 to 60 percent of his time to the program. The position is central to the implementation, administration, and advancement of the program. When asked to explain his duties and responsibilities, the manager described a series of functional tasks which, taken as a whole, provide for the smooth execution and advancement of the program. The manager:

- Coordinates and applies the district's technical and manpower resources as needed to address program needs such as traffic engineering, planning, surveying, permitting, mapping, and maintenance.
- Is routinely involved in negotiations for program planning and funding that occur within a regional decision making forum with representatives from local municipalities, county governments, and regional transit agencies.
- Directly oversees and coordinates leasing agreements such as the Parking Lot License Agreement and Standard Project Administration Agreement used to lease private land for park and ride facilities. Thirty-five percent of district lots are governed by these agreements.
- Assesses site conditions and locations for proposed new or expanded facilities.

- Conducts or oversees the inventory of park and ride stalls and maintains a central database.
- Oversees studies relating to park and ride needs, such as the 2003 *Northern Virginia Park & Ride Lot Feasibility Study, Final Report,* which was used as a model for a statewide study planned in 2011.
- Applies the district Six-Year Work Program as a management tool for advancing future regional park and ride projects.
- Coordinates and shares district park and ride information and data with the Virginia DOT central office.
- Promotes and communicates the availability of park and ride services to the general public.

From the perspective of a state DOT, the NOVA example demonstrates the correlation between program effectiveness and the time allocated by staff to the park and ride management function. The NOVA manager is knowledgeable, participates substantively in all aspects of the program, is integral to its operation within and outside of the agency, and directly influences Virginia DOT resources to the program. Most of the surveyed park and ride managers dedicated between 5 percent and 10 percent of time to their programs, with limited involvement in all aspects. Several were unaware of or removed from specific aspects, such as how or when lots are maintained, how many future stalls will be needed and where they should be located, or how funding decisions occur internally or externally. Most deferred the preparation and execution of leasing agreements—which are critical tools for expanding a park and ride program—to others. The NOVA example is considered a best practice that may be replicated by state DOTs.

Interagency Coordination. According to the manager, bringing together and coordinating all regional interests is the key to achieving a successful park and ride program. The NOVA method is embedded in the process for preparing its Six-Year Work Program. The work program serves as a management tool that identifies the features and timing of transportation projects agreed upon by regional stakeholders. The stakeholders are local municipalities, counties, rail and bus agencies, and the MPO. In these forums, past decisions have resulted in one of the most successful park and ride and high occupancy vehicle (HOV) systems in the country. This is largely due to the decision in the early 1970s to supplement the HOV network with strategically placed park and ride facilities. According to the manager, the regional decision-making process continues to support this initial objective. The process is sequential:

- Regional stakeholders first determine and document the need for a proposed park and ride facility.
- If demand is evident and there is an appropriate site, potential fund sources are discussed. The group relies on its regional allocation of federal Surface Transportation Program (STP) funds. These funds are allocated by formula and local match is required. The group also considers other federal sources as well as state and local contributions.
- When the funding source and local match are identified, the regional stakeholders must agree to use the funds for the proposed park and ride facility. When consensus is achieved, the project is listed in the NOVA Six-Year Work Program. The funds are then obligated in the STIP.

From the perspective of a state DOT, the process for securing and prioritizing funds for an expanded park and ride system is often challenging. According to the manager, there is usually no immediate gain as the regional projects must compete (often unsuccessfully) with statewide transportation priorities. It may take several years for the project to be built. However, undertaking the regional decision-making process early on—several years before need for the project is imperative and urgent—has resulted in the slow but gradual expansion of the NOVA park and ride system. The current Six-Year Work Program represents $49.1 million in park and ride improvements. All of the projects were developed in the results-oriented, decision-making process, as described.

The best practices of the surveyed programs are summarized in Table 14.

CHAPTER 3 CONCLUSIONS

While the best practices identified in Chapter 2 are instructive and encouraged for replication by state DOTs, this chapter offers additional suggestions for managing and financing state park and ride/intermodal commuter programs. It begins with the needs expressed by the surveyed managers and responds with suggestions that may be implemented with limited costs. Other suggestions identified in

Table 14 Best practices of the surveyed park and ride programs.

Program	Best Practices
Bay Area Rapid Transit	Parking fee program balancing demand and generating program revenue
Denver Regional Transportation District	▪ Efficient inventory ▪ Enhanced security and enforcement ▪ Advanced technology in fee collection, security, and user amenities
Florida Department of Transportation	Comprehensive program planning and policy methods and procedures
Maine Department of Transportation Maine Turnpike Authority	▪ Dedicated fund source for planning and development (Maine DOT) ▪ Funding and support for ZOOM commuter bus and GoMaine commuter education (Maine DOT and MTA)
Phoenix Valley Metro Regional Public Transit Authority	▪ Creative user amenities ▪ Well devised capital improvement program
Virginia Department of Transportation – Northern District	▪ Efficient, involved, and informed staffing ▪ Results-oriented regional interagency process and planning

this chapter, such as pricing and alternative financing strategies, will require further consideration. (See Table 17 for a summary of the best practices identified in Chapter 2 and these additional suggestions.)

3. A Surveyed Program Needs

The need most frequently cited by the surveyed managers is funding for maintenance, staffing, and new facilities to accommodate demand. The following are other specific needs:

- Most of the managers do not have operating budgets. Basic functions such as lot maintenance, snow removal, sign repair, and shelter installations are performed by others, on an as-needed and unscheduled basis. There is no tracking or documentation of these costs.
- Most of the surveyed managers have other job responsibilities and dedicate less than 20 percent of their time to their programs. They have limited or no support staff.
- Most of the programs have no written policies or standard operating procedures for the day-to-day management of their facilities.
- Several of the surveyed managers do not actively participate in funding decisions that affect their programs. They report that their programs are low in the department's funding priorities.

3. B Management Model Suggestions

It is suggested that a systematic, rational, and uniform approach to managing, staffing, and budgeting state park and ride/intermodal commuter programs be undertaken by state DOTs. Each aspect of this recommendation is discussed here.

3. B.1 Program Goal and Purpose

The first step in management is to articulate the goal and purpose of a program. The stated goal of the Florida DOT park and ride program, for example, is to provide "a program designed to encourage the use of transit, carpools, vanpools and other high occupancy vehicle modes, by providing safe and convenient parking facilities for commuters" (*Park and Ride Lot Program, Topic No. 725-030-002-f,* 2011, p. 2).

The purpose of the Florida program is to "provide for the purchase and/or leasing of private land for the construction of park and ride lots, the promotion of these lots and the monitoring of their usage" (*Park and Ride Lot Program, Topic No. 725-030-002-f,* 2011, p. 1).

In the Florida example, detailed policies, guidance, and procedures are developed to satisfy the intended goal and purpose. For the Virginia DOT-Northern District (NOVA), the purpose is to construct park and ride/intermodal commuter facilities that support the high occupancy vehicle (HOV) freeway system. All subsequent actions and activities of the program

are designed to meet this objective. For example, the Stringfellow Road Park and Ride Lot in Fairfax County, Virginia, is located adjacent to an I-66 HOV-only access ramp. This preferential treatment for park and ride lot users is an incentive to use the lot.

It is suggested that written goal and purpose statements—and techniques for how they may be achieved—be developed for state park and ride/intermodal commuter programs. This will assist in their orderly growth and development.

3. B.2 Program Management Plans

Management plans enable a systematic and rational approach to executing program activities and tasks. They assess effectiveness and determine if the program purpose is achieved. An example of a well developed management plan is the Florida DOT planning manual, which contains instructive guidance on how to administer the program and measure its productivity. The basic elements of any management plan should include, at a minimum, guidance on:

- Staffing Levels.
- Staff Training.
- Asset Inventory.
- Maintenance.
- Customer Amenities.
- Lot Utilization.
- Pricing Strategies.

Each of these elements is discussed here.

3. B.2.a Staffing Levels. Most of the surveyed programs have limited staff with managers dedicating less than 20 percent of their time, on average. With the growing demand for and anticipated increase in park and ride/intermodal commuter facilities over time, more staffing will eventually be needed to manage them. It is suggested that states evaluate staffing levels for these programs. Position descriptions should be tied to role, responsibilities, tasks, and time requirements. It would be optimal to develop criteria to determine the number of staff needed to perform administrative, management, and maintenance functions as these programs grow.

The most critical position description to develop is the program manager's. Ideally, the program manager should be responsible for developing and implementing the standards, procedures, and policies of the program; reporting program activities and status; marketing; and coordinating funding with other agencies and stakeholders. The manager should also be responsible for developing and administering the program's operating and capital budgets. The number of hours assigned to this position should be commensurate with its duties and responsibilities.

3. B.2.b Staff Training. Little information was offered from the surveys on how managers and staff are trained. Assuming there is little or no training, it is essential that program management plans define the type, quality, level, and frequency of staff training with modules on program history, program purpose, program functions, program operations, and program budgets, at a minimum. Ideally, training should also include asset and facility maintenance, security and fee collections, as warranted. It is optimal if training can be scheduled in annual cycles.

3. B.2.c Asset Inventory. Nearly all of the surveyed programs have inventories. Some are current; others are not. Some cover the full range of assets; others are narrow in scope. Given that state park and ride/intermodal commuter facilities are defined (and valued) by their physical assets, it is suggested that state management plans contain techniques for achieving a systematic and rational approach to asset management and documentation. It is important that a basic inventory include the following elements, at a minimum:

GENERAL

- Lot name.
- Lot number.
- Lot location/address.
- Lot ownership:
  - State, and
  - Other/status of memorandum of agreement.
- Year constructed.
- Number of spaces—total.
- Number of spaces by type: e.g., car pool, van pool, handicapped, permit, fee.
- Percent utilization—total spaces/time of day.
- Percent utilization—by type of space/time of day.

MAINTENANCE

- Scheduled maintenance (date performed, frequency, by whom):
  - Pavement surface,
  - Pavement sweep,
  - Pavement striping,

- Signage,
- Light fixtures,
- Electronic and mechanical equipment and devices,
- Trash receptacles/bins,
- Shelters,
- Buildings,
- Restrooms,
- Sidewalks,
- Snow removal,
- Leaf/brush removal,
- Grass/hedge maintenance,
- Grounds maintenance, and
- Other.

- Capital improvement (for each project: date start, date completion, location, description, by whom).
- Observed damage/needed maintenance: description, location.

AMENITIES/SERVICES

- Customer amenities: newsstands, telephones, bike racks, lockers, rest rooms, bus shelters, benches, kiosks, signs, ADA provisions, user devices, and mechanisms.
- Transit bus and shuttle services: number/type/frequency/provider.
- Retail and commercial services: location, name of service, owner of service, status of memorandum of agreement.

CONDITION RATING

(Excellent, Very Good, Good, Fair, Poor, Very Poor)

- Customer amenities (rating for each amenity).
- Buildings, pavement, sidewalks, signs, grounds, lighting, electronic devices, and mechanical devices (rating for each).
- Comments/issues.

SECURITY

- Type.
- Frequency.
- By whom.
- Comments/issues.

OTHER

- Date and time of inventory.
- Performed by whom.
- Comments/issues.

Ideally, the inventory should be stored in a secure electronic database and shared annually within the unit and within the department. The information may be used to support management decisions, strategic planning, program budgeting, and grant applications.

3. B.2.d Maintenance. Several of the surveyed managers reported that facility maintenance is conducted infrequently and often by others (in-agency or contracted out). According to the U.S. Department of Transportation (U.S. DOT):

> "Maintenance of the physical elements of the park and ride facility must be planned, deliberate activity that includes an appropriate budget, designated responsibility for maintenance requirements, and an established program of maintenance that provides for normal and special needs. Negligence in maintaining a park and ride facility has an adverse impact on perceived and real personal security as well as the physical condition of the facility." (U.S. DOT, *Park and Ride Facilities Guidelines for Planning, Designing and Operations,* 1986, pp. 6–18.)

It is suggested that management plans for these programs include guidance for achieving a systematic and rational approach to life cycle scheduling and maintenance of program assets. A strategic approach will maximize the life of the assets and minimize their replacement costs. It will also ensure that park and ride/intermodal commuter facilities receive the same level of care and attention as other elements of the state transportation infrastructure.

Because of their importance, particular attention should be given to pavement surfaces. Allowing neglect of pavement maintenance to go beyond a certain point will result in sub-grade failure and require significant replacement costs. The science of highway pavement management involves physical observation noting signs of deterioration; consideration of usage; and estimation of expected life. A similar method could be used to protect commuter lot pavement surfaces.

3. B.2.e Customer Amenities. Customer amenities are services that add to user comfort, convenience, and enjoyment. If placed strategically, they increase facility use. This is demonstrated by Phoenix Valley Metro's installation of canopies at underutilized lots to increase patronage and the MTA's provision of free ZOOM bus service for lot patrons. In both cases, the amenity increased usage.

The surveyed programs have common amenities but it is noted that they were not consistently provided at all of the lots of a program. Bicycle services, for example, were available at only 25 to 40 percent of the lots. It is suggested that management plans instruct on how to achieve a systematic, rational, and uniform approach to the provision of customer amenities, ensuring an equal level of service at all facilities of similar type or classification. For example, rural lots may not require the same amenities as urban lots. A standard level of service should be developed for each facility type or classification.

3. B.2.f Lot Utilization. Nearly all of the surveyed programs have criteria for determining the under-utilization of the parking facility, which typically represented roughly 40 percent or less occupancy. A few programs have strategies to address this. The Florida DOT offers more bus service to the under-utilized lot, upgrades access features, increases security, and/or bolsters promotion and marketing. The department quantifies the expected increase in use for each strategy. BART, Phoenix Valley Metro, and NOVA also address lot underutilization in some way.

Given that park and ride/intermodal commuter facilities are designed, cited, and intended for optimal use, it is suggested that management plans provide guidance on uniform techniques for achieving optimal utilization across all facilities.

3. B.2.g Pricing Strategies. Three of the surveyed programs charge for parking. The New Mexico DOT program is free but there is a fee for the shuttle, rail, and bus services to the facilities. The Denver RTD has a preferential fee structure, charging less for district residents. And as a best practice, BART has a variable fee structure tied to lot utilization and demand. It is suggested that guidance be developed for state DOTs considering (1) the introduction of parking fees at facilities that are currently free and (2) alternative pricing structures at facilities that currently have parking fees. Pricing variations are unlimited and may include:

- Pricing based on lot use, capacity, and demand as demonstrated by the BART program.
- Pricing based on preferential rates by mode, such as lower or no fees for HOV parking.
- Pricing tied to modal use, such as fees for bicycle parking.
- Pricing based on proximity, with higher fees for parking closest to amenities and services.

A cost-benefit analysis of these and other possible strategies would be required. It is suggested that test studies be conducted by interested state DOTs, especially at their high demand lots. This topic is also suggested for additional research to determine how pricing affects revenue generation and parking utilization.

3. B.3 Program Budgets

It is suggested that attention be given to the operating and capital budgets of state park and ride/intermodal commuter programs. Both are discussed here.

3. B.3.a Operating Budget. The operating budgets of the surveyed programs were difficult to evaluate. While BART, the Denver RTD, and Phoenix Valley Metro provided some information, most of the surveyed managers were unable to answer Survey Question #10, which requested information on the costs for operating their programs. Assuming their operating budgets simply do not exist or are controlled by others, it is suggested that operating budgets be provided for state park and ride/intermodal commuter programs and, further, they be constructed and managed by the staff responsible for the programs.

OPERATING EXPENSES. The purpose of an operating budget is to document the expenses incurred in the delivery of a service and to identify the revenue sources to pay for them. This usually begins with a schedule showing program operating and maintenance (O&M) expenses. These are typically categorized by function, such as administration, and then categorized further by type, such as office supplies. Typical O&M expenses are administration, planning, operations, maintenance, and contract services. An example is shown in Table 15.

- *Maintenance* is the cost to keep the facility clean and functional. It ranges from trash to snow removal and also involves maintenance of lighting, shelters, benches, kiosks, and restrooms.
- *Administration* represents the cost for running the program including space, equipment, and the hire and placement of staff and administrative personnel.
- *Planning* represents evaluative activities such as siting future facilities, estimating demand and facility size, documenting program performance, and preparing conceptual site designs.

Table 15 Sample program operating expenses by function and type.

Function	Type	Fiscal Year (FY) Actual
Contract Service	Service Leases/Service Rentals	$500
	Support Services	1,600
Maintenance	Labor/ Fringe Benefits	51,000
	Vehicle: Tire, Fuel, Replace	5,000
	Non-Vehicle: Storage, Equipment	200
Administration	Insurance: Casualty, Liability	6,000
	Administrative Personnel	105,000
	Dispatcher Space, Equipment	1,500
	Office Supplies	1,200
	Utilities: Electric, Telephone	800
Planning	Facility Siting	600
	Performance Reports	100
	Stakeholder Presentations	300
Operations	Fee Collection	900
	Security	2,900
	Signing	2,100
	Vendor Coordination	200
Other: Marketing	Printing, Advertising, Maps	300
	Total Operating Expenses	$180,200

- *Operations* represents the cost to provide the service. This includes fee collection activities, lot security and enforcement, traffic control, signing and messaging systems, and coordination with vendors and other modal services.

OPERATING REVENUES. While most of the programs do not charge parking fees, the cost to operate their facilities must be covered by a funding source. The typical sources used by the surveyed programs include:

- Parking fee revenue.
- Federal funds by program source.
- State funds by program source.
- Local contribution.
- Service contract funds.
- Advertising.
- Contributed or in-kind services.
- Other revenue sources.

OPERATING FORECAST. Once expenses and revenues are estimated or known, they should be forecasts over a 3- to 5-year period, at minimum. The objective is to (1) ascertain actual cost and (2) determine if revenues cover program costs. Operating budgets provide the following:

- Allow allocation of resources by function and activity.
- Aid in tracking costs by program function.
- Inform decision making in:
  - Determining staffing levels,
  - Evaluating cost effectiveness of activities and functions, and
  - Estimating unit costs for future facility planning and expansions.

It is suggested that operating budgets be developed for these programs and incorporated as an identifiable activity or cost center in the state DOT's larger operating plan and budget.

3. B.3.b Capital Budget. The capital budgets of the surveyed programs were robust and well defined. If these capital budgets are indications of what is occurring nationwide, park and ride/intermodal commuter facilities could be viewed as emerging and formidable cost and activity centers for state DOTs and transit districts and agencies. The anticipated future capital expenditures of just nine of the 13 surveyed programs represent nearly $1.7 billion programmed conservatively over a 20-year period. This is shown in Table 1.

For most of the programs, the capital budgets are constructed outside of the park and ride management unit. One exception is the NOVA which has an active role in preparing its capital budget with regional stakeholders. The staffs of the Florida, New Mexico and Maine DOTs, the MTA, and the Denver RTD also participate in some way in the capital budgeting process. Decisions on capital investments and future facilities for the remaining programs are made by others, outside of the park and ride unit.

It is suggested that program staff have a direct role and responsibility for developing the program's capital budget. A sense of ownership and control will inure to those directly responsible. Moreover, program staff involvement will likely result in realistic expectations and outcomes for the future.

3. C Funding Sources and Innovative Financing Techniques

This section discusses the funding sources used by the surveyed programs for financing their facilities and programs. Those sources not used by the surveyed

programs but suggested for consideration are marked as "*not used by surveyed programs but suggested for further consideration.*" This section concludes with a description of innovative financing and maintenance techniques that may be also considered by state managers.

3. C.1 Federal Fund Sources

Federal Highway Administration

3. C.1.a Congestion Mitigation/Air Quality Program (CMAQ). The program purpose is to reduce transportation-related emissions in air quality non-attainment and maintenance areas. Eligible activities related to park and ride/intermodal commuter facilities include:

- New transit systems and service expansions.
- Rideshare programs; services and programs with air quality benefits.
- Public education and outreach.
- Fare and fee subsidy programs.
- Transportation control measures.
- Pedestrian and bicycle facilities.
- Traffic management, monitoring, and congestion relief strategies.
- Telecommunications.
- Travel demand management.
- Public-private partnerships initiatives.
- Experimental pilot projects and innovative financing.

CMAQ funds are apportioned to states by a formula based on population and the severity of ozone and carbon monoxide pollution in their non-attainment or maintenance areas.

3. C.1.b State Planning and Research (SPR). States are required to set aside 2 percent of their federal-aid apportionments for planning and research. Each must ensure effective use of the funds on a statewide basis. High priority is given to applied research on state or regional problems, transfer of technology, and research for setting standards and specifications. Major research areas include infrastructure renewal (including pavement, structures, and asset management); safety and operations; and policy analysis and systems monitoring.

The Virginia DOT uses its SPR funds to develop the long-range transportation plan, which includes strategies for developing park and ride/intermodal commuter facilities statewide.

3. C.1.c Surface Transportation Program (STP). The program purpose is to offer flexible funding options to states and localities for an array of federal-aid eligible projects. Eligible activities related to park and ride/intermodal commuter facilities include:

- Capital costs for transit projects, whether publicly or privately owned.
- Transportation enhancements.
- Car pool projects, fringe and corridor parking facilities, and bicycle and pedestrian service.
- Surface transportation planning programs.
- Highway and transit research, development, and technology programs.
- Infrastructure-based intelligent transportation systems and capital improvements.
- Capital and operating costs for traffic monitoring and system management.
- Transportation control measures.

3. C.1.d Transportation Enhancements. The program is a component of the STP, cited previously. Its purpose is to strengthen the cultural, aesthetic, and environmental aspects of multi-modal systems. Eligible projects must have at least one of 12 qualifying activities. Those related in some way to park and ride/intermodal commuter facilities include the following:

- Facilities, safety, and education for pedestrians and bicyclists.
- Scenic easements and scenic or historic site acquisition, including historic battle fields.
- Scenic or historic highway programs including tourist and welcome center facilities.
- Landscaping and other scenic beautification.
- Rehabilitation and operation of historic railroad transportation buildings, structures, or facilities.

Funds from other federal agencies may be credited toward the non-federal share.

3. C.1.e Transportation Community and System Preservation Program. [*Not used by surveyed programs but suggested for further consideration.*] The program purpose is to address the relationship between transportation, community, and system preservation plans and practices. The program supports private sector initiatives. Eligible projects improve the efficiency of the transportation system; reduce the impacts of transportation on the environment; reduce the need for costly future investments in

public infrastructure; and provide efficient access to jobs, services, and centers of trade. Transit-oriented development plans and traffic calming measures are eligible. Grants are issued to states, MPOs, and local governments.

Federal Transit Administration

3. C.1.f Section 5307—Urbanized Area Formula Program. The program purpose is to provide transit capital and operating assistance in urbanized areas. Governors, local officials, and operators of public transit designate a recipient for an urbanized area with a population of 200,000 or more. The governor is the designated recipient for urbanized areas with a population of less than 200,000. Eligible activities include but are not limited to planning engineering and design of transit projects, capital investments in bus and bus-related activities, crime prevention and security equipment, construction and maintenance of passenger facilities, and preventive maintenance.

3. C.1.g Section 5309—Major Capital Investments (New Starts and Small Starts). The program purpose is to provide capital assistance for new and replacement buses and facilities, modernization of rail systems, and new fixed guideway systems. Eligible applicants are transit authorities, states, municipalities, public agencies and public corporations, and boards or commissions established by states. Eligible activities include (but are not limited to) the following:

- Preventive maintenance.
- Extensions and construction of passenger stations and terminals.
- Security equipment and systems.
- Maintenance facilities and equipment.
- Operational support equipment including computer hardware and software.

Allocations are discretionary and by statutory formula to urbanized areas with rail systems in operation for at least 7 years.

3. C.1.h Section 5311—Formula Grants for Other Than Urbanized Areas. The program purpose is to initiate and continue public transportation service in rural and small areas with under 50,000 populations. The goal is to:

- Assist the maintenance, development, and use of public transportation in rural and small urban areas.
- Encourage coordination of passenger transportation programs and services to ensure the most efficient use of all federal funds.
- Assist in the development of intercity bus transportation.

Funds may be used for capital, operating, and project administration. State and local governments and nonprofit organizations are eligible. State apportionments are based on a statutory formula with 20 percent allocated by the ratio of non-urbanized land area of each state to the non-urbanized land area of all states. Other federal funds may be used for one-half of local match.

3. C.1.i Section 5311(b) (3)—Rural Transit Assistance Program. The purpose of the program is to assist with the development of transit services in non-urbanized areas. States, local governments, and providers of rural transit services are eligible recipients. Funds are for training, technical assistance, and research.

3. C.1.j Section 5311(c)—Public Transportation on Indian Reservations. The program purpose is to support tribal public transportation in rural areas. Federally recognized tribes or Alaskan native villages, groups, or communities are eligible. The funds may be used for capital, operating, planning, and administrative expenses for public transit projects. The program is funded as a takedown under the larger Section 5311 program. It is also supported with American Recovery and Reinvestment Act (ARRA) funds. There is no local match requirement.

3. C.1.k New Freedom Program (Section 5317). [*Not used by surveyed programs but suggested for further consideration.*] The program purpose is to assist disabled individuals with transportation to and from employment. Grants are awarded for public transportation services beyond those required by the Americans with Disabilities Act (ADA). To be eligible, a project must be a new or alternative public transportation service beyond that required by ADA. It must assist the disabled with transportation to and from jobs and employment services. Capital and operating expenses are eligible. Ten percent of program funds may be used for program administration, planning, and technical assistance.

Public agencies, nonprofit agencies, public and private transportation providers, and human services

transportation providers are eligible grant subrecipients. State funding is apportioned by formula.

Other Federal Sources

3. C.1.l American Recovery and Reinvestment Act (ARRA). The purpose of the American Recovery and Reinvestment Act of 2009 is to (1) preserve and create jobs and promote economic recovery, (2) invest in transportation infrastructure that will provide long-term economic benefits, and (3) assist those most affected by the current economic downturn.

The U.S. DOT issues $1.5 billion in discretionary grant funds for capital transportation investments. These are referred to as Grants for Transportation Investment Generating Economic Recovery (TIGER). Eligible recipients are state and local governments, tribal governments, transit agencies, port authorities, MPOs, and multi-state or multi-jurisdictional applicants. The funds are available for obligation until September 30, 2011, and are awarded on a competitive basis. Eligible projects include (but are not limited to):

- Highway or bridge projects including interstate rehabilitation and improvements to the rural collector road system.
- Public transportation projects including projects related to New Starts or Small Starts.
- Passenger and freight rail transportation projects.
- Port infrastructure investments.

Grant funding under the program may be no less than $20 million and no greater than $300 million; however, the department has the discretion to waive the minimum grant size.

3. C.2 State Fund Sources

3. C.2.a Motor Vehicle Fuel Tax. Motor vehicle fuel taxes account for almost one-half of the revenues used by states to fund highway and, where permitted, transit improvements. The surveyed programs in California, Rhode Island, Virginia, and Florida use the motor fuel tax or excise tax to support their park and ride/intermodal commuter facilities in some way.

3. C.2.b Motor Vehicle Tax/Fee. Motor vehicle taxes and fees include vehicle registration, license fees, title fees, and excise taxes on motor vehicles, among others. In 2004, they accounted for 27 percent of total state revenues dedicated to highway expenditures, representing the second largest source of revenue for most state DOTs.

3. C.2.c Excise Tax on Vehicle Sales. Vehicle sales taxes are normally levied as a percentage of the sales price of a vehicle when purchased or first registered. Some states collect vehicle sales taxes that are dedicated for transportation and transit purposes, including Virginia and California.

3. C.2.d Personal Property Tax on Vehicles. [*Not used by the surveyed programs, but suggested for further consideration.*] Some states and localities levy a personal property tax on vehicles with fees based on the value of the vehicle. The tax has the potential of generating increasingly higher revenue yields because it is tied to the value of motor vehicles, which continues to escalate. For the vehicle owner, the fees are deductible on itemized federal tax returns. This is not the case for the traditional motor fuel tax, registration fee, and sales tax. Property tax on vehicles is levied at the county level in Virginia and dedicated, in part, to transportation services and programs.

3. C.2.e Vehicle Miles Traveled (VMT) Fees. [*Not used by the surveyed programs, but suggested for further consideration.*] With improved automobile fuel efficiencies and changing trends in personal spending and travel, the strength of the motor vehicle fuel tax to support state transportation programs has and will continue to diminish. Alternative revenue sources based on VMT are being examined. A 2005 National Chamber Foundation study, *Future Highway and Public Transportation Finance,* recommends VMT fees as a long-term system of funding. The Oregon DOT recently concluded its 2007 study, *Oregon's Mileage Fee Concept and Road User Fee Pilot Program, Final Report,* which found that implementation of mileage-based user fees is feasible and additional tests are underway.

3. C.2.f State Infrastructure Bank (SIB) Loan. All states are authorized to enter into cooperative agreements with the U.S. DOT to establish infrastructure revolving funds capitalized with federal transportation funds. These revolving funds, or SIBs, enable leveraging of federal and state resources by lending rather than granting federal-aid funds. They also have the ability to attract public and private investments. Not all SIBs are used as revolving funds. In some cases, such as in Arizona, the SIB is used as a vehicle to borrow through the tax-exempt bond market. Thirty-two states have SIBs.

3. C.2.g Grant Anticipation Revenue Vehicle (GARVEE). The mechanism is a borrowing tool created as part of the National Highway System Designation Act. A GARVEE is a bond or note whose principal and interest is repaid primarily with federal-aid funds. At least 16 states have issued GARVEE bonds for approved federal-aid projects. Transit agencies use a similar vehicle—Grant Anticipation Notes or GAN—to borrow against future federal grants allocated by formula (Section 5307) or by project (Section 5309). Approximately $3 billion of GANs have been issued.

3. C.2.h Transportation Infrastructure and Innovation Act (TIFIA) Loan. The TIFIA program provides federal credit assistance to major transportation investments in the form of direct loans, loan guarantees, and lines of credit. The program is designed to fill market gaps and leverage private investments with supplemental and subordinate capital credit rather than grants. The Rhode Island DOT is financing a portion of its T.F. Green Intermodal Facility Project with a subordinated TIFIA loan secured by anticipated revenue from customer facility charges.

3. C.3 Local Fund Sources

The local funding sources—often used as match to federal-aid grants—are typically drawn from either a transit agency or local government capital or operating fund. Local funds also represent voter-approved sales tax dedicated to a specific transportation improvement.

3. C.3.a Local Option Sales Tax. The local option tax is commonly used by local governments to support transportation programs and services in 46 states. In Colorado, a 0.4 percent increase in the Denver RTD's 0.6 percent regional sales tax is used to support the FasTrack system—a 12-year, $4.7 billion program that includes 21,000 additional parking spaces at rail and bus stations. The sales tax increase will be used, in part, to support bonding to leverage the full investment needed for the program. In Arizona, voters approved Proposition 400, which extends the Maricopa County ½ cent dedicated sales tax for 20 years. Sixteen billion dollars in revenue supports the county's 27.7 miles of expanded light rail and service enhancements on 26 existing transit routes.

3. C.4 Agency Fund Sources

Agencies that generate their own revenue have the option of allocating a portion of parking or transit fare revenue. The agency may use a part of its operating and/or capital funds to support the park and ride/commuter intermodal project. It may also have the legal authority to levy local taxes or issue bonds.

3. C.5 Innovative Financing Techniques

Public-private partnerships represent a range of contractual arrangements in which federal, state, and local governments and special authorities collaborate with private entities in the development, operation, maintenance, ownership, and financing of a transportation infrastructure project or program. The type of the arrangement is defined by the legal, political, and financial structure of the state or local sponsor. State transportation agencies are increasingly entering these arrangements. Public-private partnerships provide benefits that accelerate project development and construction; increase operating efficiency; improve maintenance and asset protection; and limit public sector exposure to risks. At least 21 states have enabling legislation authorizing some form of public-private partnership.

Summaries of types of public-private partnerships that may be appropriate for park and ride/intermodal commuter programs are provided here. All may be considered by state DOTs.

3. C.5.a Contractual Leasing Agreements. Several of the surveyed programs utilize contractual leasing agreements with private or public entities. Four options include:

- Public Ownership/Public Operation and Maintenance: This represents a public jurisdiction with ownership of either land or a facility entering into an agreement with another public entity to either develop a new facility or maintain an existing one.
- Public Ownership/Private Contracted Operation and Maintenance: This represents an arrangement where some or all of the maintenance and/or management responsibilities for a facility, owned by a public jurisdiction, are contracted to a private entity.
- Public Ownership/Lease to Business for Shared Use: This represents the leasing of all or a portion of property to an adjoining business for shared use of a park and ride facility.

- Private Ownership/Lease to Public Jurisdiction: This common leasing arrangement represents a private entity leasing all or a portion of land to a public jurisdiction for operation of a park and ride facility. NOVA often coordinates these agreements with jurisdictions and private land owners.

3. C.5.b Long-Term Lease of Existing Asset. One form of alternative financing is when public transportation authorities leverage their assets (air rights and/or property) to generate revenue or in-kind goods and services. This is usually represented by a joint development agreement with a private developer. Miami-Dade County Transit has an active joint-use policy, which provides guidelines for land development at and near its fixed rail properties. Several Miami-Date County Transit joint development projects are either completed or underway. Two examples that include park and ride facilities are:

- Dadeland South Metrorail Station: The project, known as Datran, comprises four phases of mixed-used development representing over 782,000 ft^2 of office, hotel, and retail space. The complex includes 3,500 parking spaces of which 1,100 are designated for transit patrons. The project was initiated through a swap of private land to the county in exchange for development rights on and above the station site. MDT receives a guaranteed annual rent or participation rent (percent of total gross income) generated from all uses. The project generates over $1 million annually for MDT. The 44-year lease ends in 2082.
- Dadeland North Metrorail Station: The project was initiated through a competitive request-for-proposal process in 1994. Miami-Dade Transit receives the greater of $400,000 or roughly 5 percent of gross revenues annually. The 90-year lease expires in 2084. The project has two completed development phases and a third is pending, as follows:
  - Phase I—completed in 1996—contains over 353,000 ft^2 of retail within two buildings and a 1,487-space garage.
  - Phase II—completed in 2005—contains over 195,000 ft^2 of rental residential units, over 6,000 ft^2 of ground floor retail and a 215-space parking garage.
  - Phase III—completion pending—is planned to contain over 134,000 ft^2 of office and retail and include a 362-space parking garage.

3. C.5.c Partnerships with Private Consortiums. [*Not used by the surveyed programs, but suggested for further consideration.*] States create partnerships with private consortiums to complete major transportation improvements. The private sector partner provides technical and management expertise and enables access to debt and equity markets to secure project financing. Only a few private financed infrastructure projects of this type have been completed in the United States, but several are in development in California, Georgia, Texas and Virginia, as shown in Table 16.

3. C.5.d Design Build Finance Operate (DBFO). With DBFO agreements, the responsibility for designing, building, financing, and operating a new public transportation facility (often referred to as a Greenfield Project) is transferred to the private sector. Competitive proposals are submitted by the private proposer and, after review, the state negotiates an agreement that offers the best value.

Table 16. Infrastructure projects in operation or under construction financed with taxable debt and equity.

Project	Year Open	Initial Financing (in Millions)
Dulles Greenway (Virginia)	1995	$350
SR-91 Express Lanes (California)	1995	$126
United Toll Systems Toll Bridges (Alabama)	1994–1998	$38
Camino Colombia Toll Road (Texas)	2000	$90
Adams Avenue Parkway (Utah)	2001	$12
South Bay Expressway/SR-125 (California)	2007	$621

Source: *NCHRP Web-Only Document 102: Future Financing Options to Meet Highway and Transit Needs,* 2006, pp. 4-10.

In 2005, the Virginia DOT signed such an agreement with Fluor Enterprises, Inc., and Transurban, Inc., to construct high occupancy toll (HOT) lanes on the Capital Beltway—I-495 in Northern Virginia. The agreement was enabled by the Virginia Public-Private Transportation Act (PPTA). When fully built, construction of four HOT lanes is estimated to cost $900 million, paid for primarily by HOT lane tolls. Final design of the project is expected to include park and ride facilities. The joint venture's investment in the project is estimated to be at least 15 percent of the cost. The commonwealth would bear little or no financial risk.

3. C.5.e Performance-Based Maintenance Contract (PBMC). Performance-based maintenance contracts (PBMC) are used by state DOTs as one method for meeting their maintenance responsibilities. While there are variations, generally the department prepares performance-based requirements for maintenance tasks and bundles them into a scope of work to be performed by a private contractor. While some departments have procured PBMCs with the low-bid process, an alternative is to bid the work as a negotiated, best-value contract.

The District of Columbia Division of Transportation and the U.S. DOT's Federal Highway Administration entered into a $69.6 million, 5-year contract with a private highway asset management firm for the maintenance of city streets, tunnels, pavements, bridges, guardrails, barriers, and signs. The contract also includes snow and ice control. It is performance-based and requires the contractor to use asset management practices.

A summary of all of the best practices and the suggestions discussed here is presented in Table 17.

CHAPTER 4 SUGGESTED RESEARCH

This research effort identifies several program management techniques and methods that may assist state managers in the successful implementation of their park and ride/intermodal commuter facility programs. The research also identifies other topics suggested for future NCHRP research. These topics are described here.

1. Developing a best practices guidebook for park and ride/intermodal commuter programs that builds upon the best practices and management recommendations outlined in Chapters 2 and 3. The current literature lacks information about efficient and measureable methods for managing and maintaining these programs and facilities.
2. Testing alternative finance strategies described in Chapter 3 with emphasis on the Design Build Finance Operate model and the Performance-Based Maintenance Contract model described in Chapter 3, Section C.5, Innovative Financing Techniques. These represent innovations that involve leveraging of public funds, private capital, or both to upgrade, expand, and maintain public transportation infrastructure. The initial findings from the Virginia Public-Private Partnership initiatives are currently emerging. It would be beneficial if national research on the applicability

Table 17 Summary of best practices and additional report options.

Best Practices of Surveyed Programs	
1	Parking fee program balancing demand and generating program revenue
2	Efficient inventory; enhanced security and enforcement; advanced technology in fee collection, security, and user amenities
3	Comprehensive program planning, policy methods, and procedures
4	Dedicated fund sources for planning and development and funding and support of dedicated bus and educational programs
5	Creative user amenities and a well devised capital improvement program
6	Efficient staffing and result-oriented regional interagency process and planning
Additional Options	
1	Establish uniform program goal and purpose statements
2	Develop program management plan providing guidance and instruction on staffing levels, staff training, asset inventory, maintenance, customer amenities, lot utilization, and pricing methods
3	Establish program operating budgets and involve program staff in capital planning and budgeting
4	Broaden funding sources and apply alternative finance techniques

of these techniques to park and ride/intermodal commuter facilities were conducted.

3. Developing criteria and performance measures, beyond those developed in this report, for quantifying the success and productivity of a park and ride/intermodal commuter program. The development of criteria would assist in determining what constitutes success and provide a justifiable basis for evaluating programs and conducting comparisons between them.
4. Developing a standardized metric for:
   - Staffing Levels: Determining appropriate staffing levels for park and ride/intermodal commuter programs. Many of the surveyed managers suggest more staff is needed; however, there is no documentation in the literature to determine appropriate levels based on service requirements.
   - Asset Management and Inventory: There is no standardized metric for interpreting asset management and inventories as they pertain to park and ride/intermodal commuter facilities. Specifically, it is difficult to determine what comprises an asset inventory, how often the inventory should be updated, and how the information should be used. Standardization could improve efficiency, help prioritize needs, and aid in the allocation of program resources.
5. Performing an assessment of the public or customer preferences and attitudes relating to the imposition of user fees and the provision of customer amenities at park and ride/intermodal commuter facilities.
6. Conducting a comprehensive review of state laws governing state park and ride/intermodal commuter facilities.
7. Performing a review and assessment of emerging technologies at park and ride/intermodal commuter facilities, especially regarding their practicality, benefits, and effects.
8. Conducting a follow-up and larger study of state park and ride/intermodal commuter services and facilities to determine if the findings of this research are representative. The effort may benefit from a review of facilities by class, size, or type, recognizing that services differ and vary accordingly when comparing facilities, services, and management methods.

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