

Appendix B: Commuter Rail Checklist

The purpose of this Appendix is to define steps in the planning process for an analysis of a potential commuter rail service. The list is not definitive. Rather, it cites tasks that are fairly commonly performed when commuter rail feasibility is being investigated and service is being implemented. It is included in the Ohio State Rail Plan as a check list for Ohio urban area planners who might be entertaining studying or establishing commuter rail services alone or as a compliment to the planned rail passenger services.

Commuter Rail Analysis Checklist

Any plan must follow the accepted planning processes of the organization sponsoring the study and potential implementation of commuter rail service. If federal funding is sought, federal requirements must be followed as well. It is important to actively engage the freight railroads during initial discussions and throughout the commuter rail planning process. The majority of freight rail lines are privately owned and discussions concerning use of their lines must involve them. The decision to allow commuter trains on private rail lines is a privilege granted by the private owners of the rail lines. It is not a legal right. Successful partnerships with the private railroads are necessary before attempting to begin any efforts to establish commuter rail services. Interaction with the host railroads is something that needs to be emphasized throughout the process of examining commuter rail. The rail line owner must be in agreement to allow commuter rail trains on their lines before any of the following steps can advance.

Listed below are 20 steps likely to be part of the planning process.

1. **Determine need and prerequisites for a commuter rail service.** Chief among the prerequisites are potential ridership, existence of a rail line, chronic congestion on the parallel highway, and transit supportive land uses. As regards potential demand, an order-of-magnitude ridership forecast might be performed, based on a comparative analysis with existing rail systems. The other prerequisites could be confirmed in a similarly informal, high-level fashion. A likely performer of these informal analyses would be the local Metropolitan Planning Organization. Initial patronage forecasts can also be performed by FTA's Aggregate Rail Ridership Forecasting Model.
2. **Develop a conceptualized operating plan.** A conceptual operating plan should be developed that would include schedule, station stop, rolling stock type, maintenance facility location, and capacity improvement concepts. The plan should be developed in partnership with track owner and freight service operator (often one and the same) for initial comments on capacity improvements. If conceptual ridership estimates are enough to fill two or three trains, and if the freight railroad's reaction to the operating plan is positive, the effort should proceed to a more formal preliminary feasibility study. The MPO could also assist in developing this operating plan.
3. **Identify preliminary feasibility study sponsor.** The study sponsor could be the MPO or an aggregation of jurisdictions to be served by the commuter trains. It might also be the local transit service provider. The sponsor would secure funding for the preliminary feasibility study and initiate the study. A consultant could be retained to progress the study, at the direction of the study sponsor.
4. **Consult with the Federal Railroad Administration.** The Federal Railroad Administration (FRA) has published guidelines on railroad corridor transportation plans.¹ The guidelines specify steps which the FRA will insist upon in order to secure the agency's support for the project. The FRA is the federal agency charged with safety oversight of the national railroad system. The study sponsor

¹ *Railroad Corridor Transportation Plans, a Guidance Manual*, Federal Railroad Administration, Revised July 8, 2005.

should consult with the FRA about the commuter rail concept, share the conceptual ridership and operating plan, and obtain the agency's comments. If study sponsors anticipate that federal funding might be sought to help fund the implementation, then sponsors should also consult with the Federal Transit Administration (FTA) and the Federal Highway Administration (FHWA) and obtain their comments.

5. **Establish a study steering committee.** The committee could consist of service area stakeholders to guide the analysis and offer feedback throughout the study effort. The freight rail operator should be a member of this committee. With funding secured and a steering committee in place, the preliminary feasibility study, inclusive of Steps 6 through 14 below, can begin. The study may take between 6 to 12 months to complete.
6. **Define the service concept.** Moving beyond the conceptual operating plan, and in partnership with the rail owner, the study sponsor should identify the specific endpoints, the intermediate station locations, and the equipment maintenance and layover facilities, also known as support facilities. Detailed schedules for the commuter trains would be developed.
7. **Develop a ridership and revenue forecast.** The forecast should include one for the start-up year, and another 10 or even 20 years thence. The ridership forecast should be prepared using a traditional travel demand model calibrated to produce a commuter rail ridership forecast. While most large metropolitan MPOs have a commuter rail mode in their models, many do not. The study sponsor should ensure that the model to be used will meet the requirements of the FTA, if federal funding might be sought. Revenue estimates can be based by multiplying an average fare (e.g. 15 cents per train mile, assuming a mix of monthly passes, 10-ride tickets, senior discounts, disabled person discounts, student discounts, and cash fares) by total anticipated ridership. Defensible average fares can be estimated by a comparative analysis of existing systems' fare structures.
8. **Select a rolling stock type.** Three general types of rolling stock are potentials for a new commuter rail service. One option is electric locomotives or electric trainsets, which would imply expensive electrification of the rail route. Another option is self-propelled diesel railcars, known DMUs. However, no DMUs are being manufactured in the U.S., as previously noted. To this point, the most start-up commuter rail rolling stock have consisted of diesel locomotive-hauled trainsets and trailing coaches. While there a limited number of passenger diesel locomotive builders in the U.S., used and serviceable locomotives are available. There are multiple commuter car builders in the U.S. Regardless of equipment type, each prospective equipment manufacturer should be contacted to learn equipment specifics and lead times for delivery, which can be up to 2 years. Locomotive-hauled commuter rail trainsets operate in bi-directionally in push-pull mode: a locomotive on one end and a trailing coach with a driver's compartment on the other, obviating the need to turn a trainset at each terminus.
9. **Perform an operations simulation.** This step requires the use of a computer program which can route trains over a network and resolve how trains operating in opposing directions pass each other. Large freight railroads have such programs, which resolve meet-pass conflicts on the basis of priority. Passenger trains usually have higher priority than freight trains. Thus on a single-track network, passenger trains pass opposing freight trains, which are directed by the program to passing sidings. Key inputs to the simulation are the existing track configuration, the existing freight movements on the line, and the proposed passenger schedules and rolling stock. Output will enable identification of specific capacity improvements to ensure commuter and passenger trains reliability. The simulation should also consider any freight service increases, either in numbers of trains or train length, likely to exist in the future. Ideally, the potential host freight railroad would perform the simulation, and provide the results for review and validation by the study sponsor.

10. **Calculate operating and maintenance (O&M) costs.** O&M costs include costs for crews, maintenance of equipment, maintenance of facilities, professional fees, insurance, management expenses, rents, and general and administrative expenses. These can be estimated through comparative analysis of existing commuter rail systems' O&M costs and making appropriate adjustments.
11. **Calculate capital costs.** Capital costs include rolling stock, support facilities, improvements to structures, stations, signal system improvements, new track to improve line capacity, track upgrades, grade crossing safety improvements, communications systems including electronic message signs, ticket vending machines, among other things. Improvements can include highway-rail separations, often costing millions of dollars. However, these would occur only at crossings that already have high volumes of both rail and motor vehicle traffic.
12. **Define transit integration.** Typically, the majority of commuter rail riders drive to their origin stations. At a destination station, however, those whose jobs are not within walking distance are dependent on local transit to move them to their work centers and back to the station in the afternoon. The point of this task is to determine how commuter rail and local transit can work together to provide a reliable, efficient, and effective transfer of passengers.
13. **Develop a pro forma financial plan.** This plan will identify the required operating subsidies, i.e. operating expenses in excess of fare revenue. The plan will also detail when costs for required capital improvements will be incurred. The plan will make specific assumptions about funding sources to cover expenses. At this point, study sponsor will make a decision on whether or not to seek federal assistance.
14. **Produce a transportation plan.** This plan should be consistent with FRA guidelines and compatible with the operations of the rail owner. Beyond specification of likely ridership, revenue and costs, the plan should detail the public benefits of the new rail service through such metrics as transit time savings, greenhouse gas emissions and VMT reductions, opportunities for transit-oriented development around stations, and general economic development consequent with establishment of the service. The plan should specify the likely environmental impacts to the service area of building and operating a commuter rail service, and how these might be mitigated. If the plan is adopted by the study sponsor, then concrete steps toward implementation can begin.
15. **Craft the institutional agreements for funding.** These agreements will detail the future rail service sponsors and their funding shares.

Federal funding requirements: If federal funding is to be sought, the FTA's New Starts process (49 USC Section 5309) must be followed². The process specifies that an Alternatives Analysis (AA) will be required. The AA can last 18 to 24 months. The purpose of the AA is to confirm that commuter rail is indeed the best solution to the transportation need, that is, it is the Locally Preferred Alternative (LPA). It will revisit anticipated ridership, revenue, and costs to the degree required by the FTA, the likely source of federal funding for the project. At local discretion, the AA may include the undertaking of a Draft Environmental Impact Statement (DEIS). FTA strongly encourages the involvement of a wide range of stakeholders – including the general public – in the AA study process. The DEIS effort can require another 18 to 24 months. If FTA accepts the AA and the LPA, federal funding can be obtained for preliminary engineering, final design, and construction. If no federal funding is sought, the service sponsors can move directly to right-of-way purchase, design, construction, rolling stock acquisition, and implementation. It is important to note that

² More detail on the New Starts process can be found at:
http://www.fta.dot.gov/planning/newstarts/planning_environment_2608.html

modifications for railroad rights-of-way are exempt from environmental review. However, construction of stations and support facilities, which normally are at least partially outside of a rail right-of-way, would require environmental assessment.

16. **Establish a service management team.** The team is required to move ahead with the federal requirements, if federal assistance is sought, or to move ahead directly to design, construction, etc., and to secure operating agreements with the freight carrier/track owner. The team will need to continue to involve the FRA and FTA, and potentially the FHWA, in planning and oversight.
17. **Order equipment and build the system.** These tasks can occur concurrently. They could take another 18 to 24 months. Shorter lead times for equipment could be achieved, if orders are added to already contracted production runs. Time could be slashed if used but serviceable rolling stock could be found. Nashville's Music City Star purchased surplus rolling stock from Chicago's Metra service to begin operations. Negotiations for any land acquisitions required for stations and support facilities could push back the start of construction.
18. **Hire an operator and an equipment maintainer.** The management team could contract with Amtrak, with a private contractor, or with the track-owning freight railroad for operations and maintenance of equipment. For example, Caltrain on the San Francisco Peninsula contracts with Amtrak to operate and maintain trains. A non-railroad private contractor provides these services to Altamont Commuter Express (ACE) in Northern California. Operating on BNSF Railway track, Sounder in Seattle relies on BNSF to run trains and on Amtrak for equipment maintenance. The host freight railroad may wish to retain responsibility for higher track maintenance levels consequent with the implementation of passenger trains, and be reimbursed for this work by the commuter service.
19. **Test and debug the system.** Once the track and signaling systems have been improved, the stations and support facilities built, the rolling stock delivered, ticketing and communications systems installed, and the operator trained, testing and debugging must be performed prior to start of revenue service. Inevitably there will be glitches that will need to be fixed. Testing and debugging could require a further 6 months.
20. **Cut the ribbon and begin revenue service.** Services for which federal funding was not sought can start within 2 to 3 years of when the service concept was adopted by project sponsors. Start-up of services for which federal funding was obtained can take twice that time, or even more. Regardless, opening day is a long anticipated and eagerly awaited event. Some services have kicked off operations by temporarily offering train rides free to the public in an effort to engender support and interest in the service.

With an Eye to the Future

Once the service is up and running, service sponsors will likely continue to grapple with securing funding for regular operations and capital improvements. If service sponsors include multiple agencies, recurring debates over who should contribute how much can be expected.

As ridership builds, the service managers may seek to expand the service, either in terms of more trains, more lines, or line extensions, or all three. Such expansion will require a critical long-term strategic assessment of the system: what it has accomplished, and where it needs to go. For example, new outlying housing developments along the rail line or beyond the existing terminus may indicate a need for new stations or a line extension. Rapid ridership growth may indicate a need for either more cars per trainset or more trains.

The results of that assessment will share elements with the preliminary feasibility study discussed above: forecasts of ridership and revenue, estimates of operating and capital costs, and perhaps even modifications of

the institutional structure if new jurisdictions are to be served. Based on that analysis, work for the future can begin. As stated, it is critical to work in partnership with the rail track owner and consider the economic value of sustaining effective freight capacity throughout the process.