

Multiple-Phase Start-up: Headache or Opportunity?

PAUL O'BRIEN

Two distinct approaches to the start-up of light rail systems have been used over the last decade. Certain properties, such as San Diego (the South Line) and Portland, have begun operating the entire line at once, whereas others, such as Los Angeles and San Jose, have chosen a multiple-phase start-up. A few of the major aspects of a multiple-phase start-up are managing the media, coordinating operations and construction, the cut-over of a new phase, and maximizing windows of opportunity. A multiple-phase start-up can be a great opportunity to "sell" the system and work out some details of operations and maintenance if the potential pitfalls are effectively managed.

The last decade has seen a constant stream of new rail properties begin service in North America. Although most were light rail, heavy rail and automated guideway systems were also well represented. The next decade is unlikely to see a slowdown in the introduction and expansion of rail service. At last count, at least 10 urban areas were actively planning new rail systems. Ultimately these areas, and even some systems considering expansion, will be faced with the dilemma of a project in which one or more pieces lag behind the project as a whole. Given the enthusiasm shown for rail in most areas, managers will soon be faced with a choice of offering less than full service on a segment of the project or offering no service until the project is complete. If the decision is made to open one portion of the project ahead of another, the specter of a multiple-phase start-up presents itself. Is this phased start-up a great opportunity to whet the area's appetite for rail, or is it a challenge destined to become a major headache for agency personnel and contractors alike?

Starting up a new rail system is an exercise in tension for all concerned. As the day of operation approaches, the pressure is on the contractors to finish up and on the operator to be ready. Resolution of these two goals is a stress-inducing juggernaut. It is in this arena that a decision has often to be made whether to introduce part of the system or wait until the entire system is complete. In the cases of San Diego's South Line and Portland, the decision was to open the entire line at once. Buffalo and Los Angeles chose to begin operating pieces of the line and bring the complete line into service in three phases. Ultimately each system became a rousing success but they each reached that point in a different manner.

Once a decision is made to attempt a multiple-phase start-up, two major aspects must be considered. First is public perception, which includes political perception. How will the public and the media perceive the phased start-up and what effect will it have on existing travel patterns. Second is the

technical and professional aspect. What hardware, training, and staffing issues have to be addressed?

IMAGE AND EXPECTATIONS

Because no rail system is entirely self-supporting, the support of the public and political representatives can make a difference in the ability of the agency to carry out its transportation mandate. What is put on the street is the reality of the operation to people outside the transit agency. What is seen then needs to be managed to present the best image of the rail system. Expectations must be realistic and well communicated. Each start-up phase must be clearly labeled as to its role as a part of the entire project.

For example, the opening of 6 mi of line in San Jose, operating in basically an industrial area, was sold as introductory service. No bus routes were changed and no ridership expectations were created.

When the rail vehicles begin rolling, the public will begin to judge performance. Empty trains, delayed trains, or trains that function improperly begin to create an impression. A train that takes 40 min to reach its destination rather than the 20 min the customers expected has already created an impression. The fact that a traction motor was "lost" or a switch failed to throw is academic.

What the public sees needs to be managed by the rail operator. If a phase involves use of a temporary terminal, for example, strategies should be developed ahead of time to deal with any problem that could arise. If stations are in an unfinished state, consideration should be given to managing noise and dust that may be created from continuing construction. If the car wash is not functioning properly, ensure that alternate methods are available for car cleaning.

For example, Los Angeles used temporary terminals at each end of the initial phase. A strategy was developed to deal with the loss of the single crossover at one terminal and with the necessity of having return passengers alight from the train at the terminal.

COMMUNICATION

Expectations of each phase must be realistic and clearly communicated. If the purpose of Phase 1 is simply to get the public used to the idea of rail, sell the service as demonstration, or preliminary, or as a test to avoid customer disappointment if the equipment does not work as well as expected. On the positive side, Phase 1 could be billed as a festival sort

of operation where the public is invited to help work out the "bugs." If regular revenue service is proposed, bite the bullet and pad recovery time and begin operation with a realistic and, most likely, conservative definition of operating hours.

Each phase of start-up must be clearly labeled. If the reason for operating is to demonstrate the technology, then the operation should be presented as a demonstration and not linked with the existing transit network. If, initially, temporary facilities or restricted operating hours will be in force, this should be conveyed to the public ahead of time. The public must be made aware that the railroad is not in its final form and expectations should not be raised and then dashed because of a poor customer experience.

For example, Buffalo began demonstration service during the midday periods on weekdays on the surface portion of the line. Experimentation took place with headways and operating strategies.

TECHNICAL ISSUES

From a technical and professional standpoint, phasing in parts of a project provides an opportunity to test equipment and procedures under near operating conditions when public expectations are low. Different operating and maintenance strategies can be explored and tested. On the other hand, close coordination between operations and construction is necessary and the cut over of each phase must be carefully monitored.

A new system invariably has "bugs" that need to be worked out. Even the best prerevenue simulation can not compare to actual revenue service. Operating revenue service in a first phase is a good opportunity to learn a little more about true system capabilities. Single-track operation, troubleshooting, and discovering whether the staff has a true sense of the urgency of rail operations can be uncovered during the first phase of operation. By using temporary terminals, one can discover their positives and negatives prior to the full line being in operation. The advantage to the public is that they have an opportunity to "touch and feel" the railroad and get a sense of what it is about. Phasing in a portion of the operation is also a way to focus attention away from the years of construction disruption and gear up to the excitement of an operating rail system.

For example, San Jose began operating on the transit mall prior to the opening of the south line. This let the staff become familiar with turnback strategies and the uniqueness of mall operation prior to heavy customer traffic.

Phasing in the operation allows operating and maintenance strategies to be tested. Hours of service, headways, and running time can be tested in revenue service and adjustments made prior to opening the full line. Preventive maintenance strategies can be explored and a better feel for the performance of equipment under operating conditions can be gained.

Staffing requirements can be worked out based on the operating history of the first phase. Actual operation can reveal staffing adjustments that may need to be made prior to full line operation.

For example, Los Angeles was able to fine-tune operating, maintenance, and staffing issues so that when service was

expanded into the tunnel the resulting major increase in travel was easily accommodated.

CUT-OVER

The physical cut over from one phase to another is an area of critical importance to a smooth phased start-up. The first situation to be encountered is that everyone wants to work weekday, daylight hours. Unfortunately it is just not possible to complete construction, testing, and training all at once.

Windows of opportunity have to be identified and taken advantage of to ensure efficient use of facilities and personnel. Close coordination will have to take place between the operating group and the construction group. It is advantageous to have a single point of contact on each side who will be the final arbiter of all disagreements. Operating personnel should be prepared to work odd hours to handle the transition smoothly from one phase to another. However, once construction is complete, the operating personnel need an appropriate length of time to operate prerevenue service over the new phase.

For example, Buffalo operated nearly all prerevenue service during the tunnel activation phase on the graveyard shift. Daily hand offs from construction to rail control ensured that daily transitions went smoothly.

FULL LENGTH VERSUS MULTIPLE PHASE

Although a multiple-phase start-up allows rail operators the opportunity for experimentation, a full-length start-up permits most problems to be visited just once. Only one grand opening is held, permanent terminals are established immediately, and the public does not have to adjust to different scopes of rail services.

On the other hand, Portland's air-conditioning situation or San Diego's single-track inadequacies may have surfaced with less negative feeling if they had been discovered prior to full operation. In Sacramento full operation of the North Line avoided delaying the introduction of rail service by 6 months while waiting for completion of the East Line. This approach, also used to a certain extent in Miami, was a full-length start-up in that each leg of the system was self-supporting. This approach eased many of the problems of dealing with unmet expectations.

CONCLUSION

In summary, multiple-phase start-up has been used successfully by rail operations from Buffalo to Los Angeles and has paid dividends ranging from increased awareness of rail on the part of the public to better preparedness on the part of the system operator.

However, the challenges of start-up in this manner require attention to many aspects both of a public perception and a technical nature. A full-length start-up has the advantage in that many situations are visited only once.