From Commuter Rail to Regional Rail
Operating Practices for the 21st Century

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Several low-cost, low-technology measures can upgrade service levels and reduce unit costs of operation on commuter railroads. By gradually implementing one-person operation and other techniques borrowed from rapid transit, busier commuter rail properties can emulate the frequency and comfort of such modern regional rail transit lines as the Port Authority Transit Corporation, Bay Area Rapid Transit, and the Washington Metro. Metra Electric (formerly the Illinois Central Electric) offers an example of how these measures might be implemented. In their heyday, the Illinois Central Electric and other commuter railroads provided service of similar quality to today's regional rapid transit lines. Today these commuter lines operate at needlessly low levels of efficiency, but these measures should help commuter railroads develop their potential. The result should be a win-win situation: more efficiency for management, more jobs for labor (as a result of more frequent service), and more service for customers.

Commuter railroads pride themselves on the personalized service they offer their passengers. The friendly conductor helps riders on and off the train, punches tickets, and calls the stops. This may be fine for lines with hourly off-peak service and peak-hour trains every 15 or 20 minutes. But, for more frequent service, this traditional method of operation is a luxury that few systems can afford.

The Port Authority Transit Corporation's (PATCOs) Lindenwold line in Philadelphia, the Washington Metro, and San Francisco's Bay Area Rapid Transit (BART) offer rapid transit intensity and commuter railroad comfort (at least for seated passengers; the Washington Metro and BART are also designed for standees). The frequent trains on these lines, automatically driven with one-person crews, offer much more service for their operating budgets than does commuter rail.

So far, commuter railroads have not viewed operating practices on these modern lines as being transferable to their older, more institutionally rigid systems. Yet, there may be hope for older systems for which new cars, new downtown tunnels, or automatic operation are not realistic possibilities. The examples of S-Bahn and RER services in Europe show that electrified commuter lines can, indeed, be upgraded to modern regional rail standards.

Vuchic et al. (*1*) have shown how established commuter railroads can close the gap between existing practices and the frequent, efficient operation of new regional rail through incremental steps. This analysis, building on Vuchic et al.'s work, shows how several low-cost, low-technology measures can upgrade service levels and reduce unit costs of operation, using Chicago's Metra Electric as an example.

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METRA ELECTRIC: AN OPPORTUNITY FOR REGIONAL RAIL

Several transportation professionals recognize the need for traditional commuter rail to live up to its full regional rail potential. Eisele (*2*) has called for a greater appreciation of what modern regional rail can do for metropolitan mobility. Schumann and Phraner (*3*) describe regional rail as an "emerging rail transit service concept" that "integrate[s] suburban, urban, and downtown travel functions." BART and the Washington Metro meet these criteria, but some traditional commuter railroads do not because they serve too limited a range of origins and destinations. Metra Electric is one of those commuter lines that already qualifies by these standards.

In addition to serving a major suburban travel corridor, Metra Electric reaches several important intermediate points. Philadelphia's Regional Rail, Cleveland's Red Line, and St. Louis's MetroLink are among the few American rail transit operations reaching a comparable range of destinations using rail alignments (*4*).

WHAT IT IS AND WHERE IT GOES

Metra Electric is a 65.3-km (40.6-mi) commuter railroad electrified with overhead wire at 1,500 volts of direct current. Overhead clearances allow the use of double-deck cars. Figure 1 shows the arrangement of revenue tracks and stations. The main line is entirely grade separated and has no conflict points with other railroads except for a junction at 115th Street–Kensington with its tenant the South Shore Line, which uses Metra Electric to reach downtown. Both the South Chicago and Blue Island branches run at street level, with numerous grade crossings.

Within 12 km (7.5 mi) of downtown, Metra Electric serves an exceptionally rich mix of travel destinations in addition to Chicago's Loop. Also, with its Randolph and Van Buren stations, Metra Electric is the only Chicago commuter railroad with more than one downtown station.

Just beyond the heart of the city, adjacent to Roosevelt Road [2.2 km (1.4 mi) from Randolph and 1.3 km (0.8 mi) from Van Buren] are the Field Museum of Natural History, the Shedd Aquarium, and Soldier Field football stadium. McCormick Place [4.3 km (2.7 mi) from Randolph] serves Chicago's major convention center—and an extension has been built directly above the station. Twenty-Seventh Street [5.2 km (3.2 mi)] serves Michael Reese Medical Center and Mercy Hospital.

Near 57th Street [11.3 km (Milepost 7.0)] is the Museum of Science and Industry, one of Chicago's most visited attractions. One stop further, 59th Street [11.9 km (7.4 mi)] serves the University of Chicago. Many university employees take the train to work, giving 59th Street a large flow of passengers boarding and alighting during the peak hours. The stations at 57th and 59th, along with others at

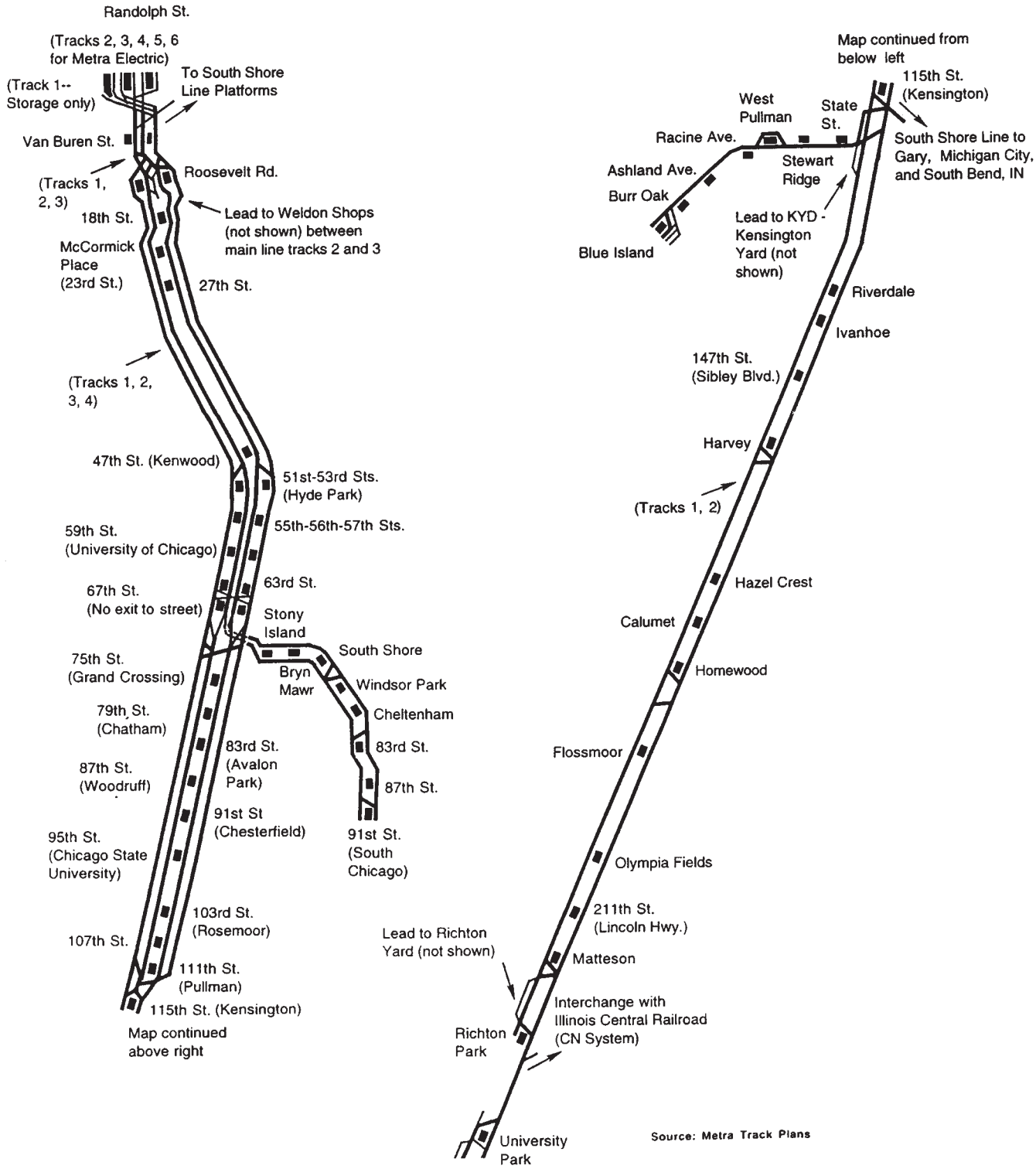

FIGURE 1 Metra Electric track and station arrangements.

47th and 53rd Streets, also serve the upper-middle-class university neighborhood of Hyde Park. Finally, if aviation officials build a proposed third airport near Peotone in the far south suburbs, it will need good ground access to succeed commercially. An extension of Metra Electric might well be an optimum choice.

In any northern European city, a railroad that connected as many major attractions as this would have very frequent service. Under Illinois Central's auspices, Metra Electric once offered service of S-Bahn intensity. With incremental investment and certain changes in outlook and operating practices, it might come to do so again.

FROM ILLINOIS CENTRAL TO METRA ELECTRIC

The Illinois Central's (ICs) first commuter train ran in 1856, but the service and its catchment zone on Chicago's South Side truly came into their own in the decades after the Chicago fire of 1871.

> By the turn of the [20th] century, the IC's suburban lines had [largely] taken the shape they have today. Though the trains were hauled by [steam] locomotives . . . in most other respects the IC's suburban service was operated on rapid transit principles. The stations were closely-spaced . . . there was very frequent service, tickets were collected in the stations, high-level platforms were in use. (*5*)

The IC was traditionally Chicago's busiest commuter railroad. Concerns with smoke from steam locomotives along the South Side lakefront led to the commuter service being electrified in 1926 (*6*). Despite the high capital cost of electrification, the railroad enjoyed increased ridership and lower operating costs. Not only was electrification cost-effective over the years, it also reduced pollution and led to increased investment en route. Especially in the Hyde Park neighborhood, electrification touched off a boom in apartment construction en route—which also supplied the IC with more riders (*7*). As an indicator of the IC's importance, Rand McNally's *Chicago Street Guide and Transportation Directory* for 1947 included maps of the city's regular transit lines and also showed a map of the Illinois Central Electric. No other Chicago railroad received this honor.

During the Illinois Central Electric's heyday, the railroad billed its commuter service as "Chicago's Finest Transportation" on the front cover of its timetables, and justifiably so. The IC, with two downtown stations at Randolph and Van Buren, served the center of the city better than any of Chicago's other commuter railroads. Its closely spaced stations provided convenience comparable to the Elevated, yet the IC's railroad alignment permitted higher speeds. By the standards prevailing until the early 1950s, the IC offered state-of-the-art transit, in much the same way that the Lindenwold Line and the Washington Metro do today.

Not only was the IC Chicago's finest transportation; it also belonged very much to the city. Until the postwar years ushered in a new era of suburban growth, most of the IC's riders traveled within the city, particularly between downtown, Hyde Park, South Shore, and South Chicago. A 1946 schedule shows South Chicago branch trains, serving these core markets, running every 10 minutes all day, like such rapid transit properties as BART today. The intensity of service stood comparison with electrified commuter lines in New York and Philadelphia (*8*) and even with the IC's counterparts abroad in London, Paris, Sydney, and Buenos Aires. Table 1 summarizes the

TABLE 1 Illinois Central/Metra Electric Service Patterns for Selected Years

Year	Main line to south suburbs	South Chicago	Blue Island
1946	Every 40 minutes, all day, every day, plus additional rush hour service	Every 10 minutes (20 minutes evenings and Sundays), plus additional rush hour service; also rush hour locals serving since-abandoned stops between 27th and 47th Streets	Every 40 minutes, all day, every day, plus additional rush hour service
1965	Every 40 minutes (60 minutes evenings and Sundays), plus additional rush hour service	Every 20 minutes (60 minutes evenings and Sundays), plus additional rush hour service	Every 40 minutes (60 minutes evenings and Sundays), plus additional rush hour service
1974	Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service	Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service	Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service
1979	Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service	Every 30 minutes (60 minutes evenings and Sundays), plus additional rush hour service	Every 60 minutes all day, every day, plus additional rush hour service
1982 to date	Every 60 minutes Monday through Saturday (every 2 hours on Sundays), plus additional rush hour service	Every 60 minutes Monday through Saturday (every 2 hours on Sundays), plus additional rush hour service	Every 2 hours Monday through Saturday (but every 60 minutes during evenings), plus additional rush hour service (no service on Sundays)

Source: Published Illinois Central Electric and Metra Electric timetables.

service that the IC has provided since World War II. Even with the various service reductions over the years, Metra Electric remains one of North America's finest commuter railroads, with respect to both service levels and seating comfort.

READJUSTMENT AND MODERNIZATION

The IC provided more service to the city than any other Chicago railroad. As a result, the postwar decline of urban neighborhoods hit the IC harder than its counterparts elsewhere in Chicago or other cities. IC Electric ridership peaked at 35 million in 1929, just before the Depression, and reached its highest point ever in 1946, when ridership reached 47 million. (Metra Electric recorded 11.2 million passenger trips in 1997.)

The Chicago Transit Authority (CTA) inadvertently made matters even worse for the IC with the opening of the Dan Ryan rapid transit line in 1969, reaching deep into the IC's South Side travel zone. Chicago transportation reporter David Young noted in 1978 that

> the response of the IC . . . contrasts sharply with that of the [Chicago &] North Western, which faced similar problems in the inner city. The North Western in the 1950s began a successful program to close stations in Chicago at which ridership was insignificant because of racial change or because its fares could not compete with cheaper . . . rapid transit or bus service. The IC continued to operate most of its stations in the inner city despite ridership declines. At times the IC's commuter . . . operations resembled a rapid transit system using oversized equipment. Even today the IC has relatively short 30-minute headways at off-peak times, versus hourly headways on other [Chicago] railroads. (*9*)

The original 1926 cars showed just how much the IC was like a transit line. Although IC cars were longer and wider than those on the Elevated, the interior arrangements were similar. There were large entrances at both ends. Most of the car was filled with two-and-two walkover seats, but just inside the doors were longitudinal benches—and grip handles for standees. This provision for standees was just as well, because ridership was so heavy that many passengers had to stand. Contemporaries of the IC cars on the Rock Island, Canadian National, and Staten Island Rapid Transit were similarly outfitted for standees. Yet at the same time, the IC's rattan seats were considered elegant for their time. Today's Washington Metro and BART cars are comparably designed to maximize capacity for standees and comfort for seated passengers.

The IC's electric cars were the last word in commuting in the 1920s, but by the 1960s, they were showing their age. In the early 1970s, the railroad replaced most of its 1926 cars with new Highliner bi-level cars—so far the only electric multiple units to use the standard Chicago car design. The remaining old cars were retired by 1979. The Highliners are among the most comfortable commuter railcars in North America, and were designed by the same firm that fashioned the BART cars. With today's moderate ridership, almost every passenger is able to find a seat.

In 1976, the Regional Transportation Authority (RTA) started subsidizing the IC. One unintentional result was that the regionally based fare zones resulted in a sharp increase in fares on Chicago's South Side, causing many riders to shift to CTA. In 1981, when RTA was in the depths of a financial crisis, there was a series of drastic fare increases, and the IC lost about a third of its riders. Many suburbanites found an informal alternative to the IC by chartering school buses for their commute downtown (*10*).

In the city, ridership on the South Chicago branch and in Hyde Park had declined from 9,900 inbound boardings in 1969 to 4,100 (just before the 1981 fare hikes) and then fell to less than 3,000 by the end of 1981. Meanwhile, CTA was operating overcrowded buses on a nearby express route every 1 minute, 45 seconds, on average, while train seats were going empty. To remedy this, the RTA instituted a reduced-fare experiment between Randolph Street and South Chicago, starting in 1982, which succeeded in taking some of the pressure off the nearby express bus (*11*). The lower fares closer in to downtown have not only been made permanent but have been extended to the area's other railroads as well.

Since the most recent service cutbacks in 1981, there have been few changes in service. In 1987, the Illinois Central sold its electric lines to Metra, northeastern Illinois's commuter rail system; since then the service has been officially known as Metra Electric (*12*).

FARE COLLECTION AND OPERATING PRACTICES

One area in which the Illinois Central Electric has long resembled rapid transit is its use of fare collection at stations, supplementing (and often replacing) the on-train inspection of tickets. Traditionally, the railroad employed a large gate staff to check tickets as passengers entered and left the paid areas of stations (*13*). To reduce its gate staff without having conductors check all tickets on board, the IC inaugurated automatic fare collection (AFC) in 1966.

At first, AFC was limited to the downtown stations (Randolph, Van Buren, and Roosevelt Road). After resolving various problems with the hardware and the magnetically encoded tickets, the IC expanded AFC to most outlying stations starting in 1967, and conductors checked only tickets of riders boarding at stations without automatic fare gates. The railroad replaced the original fare gates (which closed abruptly behind passengers) with more user-friendly turnstiles in the 1970s (*14*). The turnstiles, ticket vending machines, and passenger assistance telephones allowed the IC to retire most of its station agents.

Before the advent of AFC, the IC operated trains of two and four cars with an engineer, a conductor, and a collector. Two collectors traveled with longer trains. The railroad saw AFC as a way not only to retire many of its gate personnel but also to run trains with fewer crew members. In the late 1960s the railroad sought to operate trains with just a motorman and a conductor, and was willing to offer attractive early retirement packages to the employees who would be affected. But labor insisted on job protection, so the issue went to arbitration. The arbitrator ruled that short trains (two and four cars) needed only a two-person crew, and longer trains (eight and ten cars) should continue to have three crew members, but there was no ruling on six-car trains. When the railroad scheduled six-car trains to run with only two employees, the unions went out on strike in April 1969. The strike, which also involved crew sizes on freight trains, was settled within a week, on terms advantageous to labor (*15*).

In 1981, a regional transit financial crisis led authorities to slash off-peak IC service in half. Labor protection requirements, however, forced management to keep its employees on the payroll. Both as a response to labor rigidities and as a way of cutting down on fare evasion, the IC staffed all trains with three-person crews, and started "auditing" all tickets on board as a supplement to the existing AFC system. Metra has retained AFC (and modernized the hardware), because AFC relieves Metra Electric conductors of much of the on-board ticket selling that takes place on other lines, thus allowing train personnel to audit tickets more efficiently (*16*). Auditing has become all the more important since the early 1990s, as the introduction of a $5 weekend pass using non-AFC-compatible

ticket stock has led Metra to "freewheel" the turnstiles at many stations.

METRA ELECTRIC TODAY: A BRIEF OPERATING ANALYSIS

There exists ample track capacity for improving frequencies to modern regional rail levels in the off-peak hours. The challenge is for Metra Electric to expand its peak-hour service to accommodate the increased travel a true regional rail line can expect.

Table 2 summarizes the scheduled trains currently operating outbound during the busiest hour of the afternoon peak, from 4:45 to 5:44 p.m. Trains leave Randolph and proceed through Van Buren Street either on Track 1, the outside express track, or on Track 2, the inside local track. (Track 2 is signaled for bidirectional running; Track 3 operates inbound only and observes many equipment moves bound for Randolph Street during the afternoon peak.)

Assuming that Metra Electric stays with its existing block signal system, trains would run on headways no shorter than today's 3-minute minimum on each track. This suggests that express service is operating close to capacity, as most of the available slots are already taken by Metra Electric and South Shore Line trains. Increasing train lengths beyond the present six cars would appear to be the way to increase capacity on the main line to University Park, rather than adding trains. However, the local services cannot use longer trains, because grade crossings limit the length of the high platforms to four cars on the South Chicago branch and two cars on the Blue Island branch.

Fortunately, reserve capacity is available on the local tracks. With a 4-minute minimum between locals leaving Randolph, three more trains can be added during the peak afternoon 1-hour period (plus another possible train at 5:45 p.m.). Allowing a 3-minute minimum between trains, seven more locals can be accommodated during the peak 60 minutes (not counting the hypothetical 5:45 departure). Still more trains could be slotted in with modifications in the departure times of existing trains, but from an operating perspective, some leeway should be maintained in the rare event of service delays.

TABLE 2 1997 Metra Electric Outbound Service During Peak Hour, 4:45 p.m. to 5:44 p.m.

Train departing Randolph via:		
Outer express track (#1)	Inner local track (#2)	Train type and destination (South Shore Line trains in parentheses)
	4:45 PM	South Chicago local
4:47 PM		Zone express, Olympia Fields through University Park
	4:49 PM	Local to 115th-Kensington
4:50 PM		Zone express, Hazel Crest through Flossmoor
4:53 PM		Zone express, Riverdale through Harvey
	4:54 PM	Express to 115th-Kensington, then local to Blue Island
	(4:57 PM)	(South Shore Line train to Michigan City, IN--see note below)
	5:00 PM	South Chicago local
5:02 PM		Zone express, Olympia Fields through University Park
5:05 PM		Zone express, Hazel Crest through Flossmoor
5:08 PM		Zone express, Riverdale through Harvey
(5:10 PM)		(South Shore Line train to South Bend, IN)
	5:11 PM	Express to 115th-Kensington, then local to Blue Island
	5:15 PM	South Chicago local
5:17 PM		Zone express, Olympia Fields through University Park
5:20 PM		Zone express, Hazel Crest through Flossmoor
	5:21 PM	Express to 53rd St., then local to 115th-Kensington
5:23 PM		Zone express, Riverdale through Harvey
(5:28 PM)		(South Shore Line train to Michigan City, IN)
	5:30 PM	South Chicago local
(5:32 PM)		(South Shore Line train to Gary, IN)
5:37 PM		Zone express, Olympia Fields through University Park
5:40 PM		Zone express, Hazel Crest through Flossmoor
	5:41 PM	Express to 59th St., then local to Blue Island
5:43 PM		Zone express, Riverdale through Harvey
Total 15 trains on Track 1	Total 10 trains on Track 2	

Note: All South Shore Line trains except the 4:57 PM operate on Track 1. The 4:57 PM train operates on Track 2 instead in order to balance the electric power load on Metra Electric's main line.

Some bottlenecks and conflict points have no feasible remedies and must simply be managed as well as possible. These include the south throat of Randolph Street, the north end of Roosevelt Road (where four tracks narrow down to three northbound), the leads to and from Weldon Shops just south of Roosevelt Road, and the north and south approaches to Kensington Yard in the vicinity of 122nd and 124th Streets.

Other problems might be alleviated with appropriate capital investment. For instance, 115th-Kensington is a major conflict point because the four-track main line narrows to two tracks just north of the station, and it is a junction point for both Blue Island branch and South Shore Line trains. Flying junctions might speed the movement of South Shore Line trains, and there might be major operating benefits in reconfiguring Kensington as a four-track station with an additional platform.

INCREMENTAL TOOLS FOR SERVICE RENEWAL ON METRA ELECTRIC

One rail operation that is comparable to the closer-in portions of Metra Electric in its geometric characteristics, right-of-way, ridership levels, and market position is Cleveland's Red Line Rapid. Institutional issues aside, the Red Line resembles Metra Electric more than it does most other rapid transit lines, modern or traditional.

The Cleveland cars have a fare box and doors directly behind the train operator's cab. By opening only the adjacent doors at unstaffed stations, the train operator ensures that all boarding customers pass by the fare box. Of course, this works only with one-car trains, which are common in Cleveland. The Cleveland Rapid's operating methods may be relevant for Metra Electric's South Chicago branch, and to a lesser degree, on the Blue Island services.

Cleveland's Rapid operates with a single fare zone. Although the Cleveland experience may be applicable between Randolph and South Chicago, fare zones elsewhere on Metra Electric are based on distance. Passenger volumes on the Blue Island trains are light enough so that the train operator could check tickets for zone validity, but this will not be practical for main line service to the south suburbs. The best model for the south suburbs may be PATCO's Lindenwold Line, which uses one-person crews, has automatic fare collection at all stations, and has no on-board ticket inspection. The IC approached (although never fully achieved) the goal of doing away with on-board ticket sales from 1967 until 1981, when the railroad went back to punching tickets.

Although it is not possible to put an end to all fare evasion, it can be minimized even without punching tickets. For instance, the Chicago Transit Authority installed new turnstiles in 1996–1997 with bars above passengers' heads mounted in such a manner as to deter would-be turnstile jumpers. Although this may be helpful, particularly at high-evasion locations, this strategy should be applied with caution.

A majority of turnstile jumpers on Metra Electric today are not fare evaders, however. Rather, they are commuters who see their train arrive and, in order to catch it and avoid waiting for the next train, go over the turnstiles and pay their fare plus a penalty charge to the conductor or the gate attendant at the Van Buren or Randolph Street stations. Failure to buy tickets before traveling should not be treated as a serious issue until service is so frequent that commuters will not be inconvenienced by waiting for the next train.

Especially on the South Chicago and Blue Island branches, where stations are located at street level, there are few barriers to deter fare evaders from jumping off or onto the platform and bypassing the turnstiles altogether. Several options are available for facilitating one-person operation, individually or in combination. One is switching to a proof-of-payment system with random ticket inspections (which has succeeded in such challenging urban contexts as Los Angeles–Long Beach). Another is installing fences and other barriers, such as the riangular wooden slats that deter trespassers at grade crossings on the Chicago El. A third option is using cars with door configurations that require riders getting on or off at local stops to pass by the train operator and pay the correct fare (as used on Cleveland's Red Line).

In deciding about fares and how they are collected, Metra may want to explore ways of making joint fares readily available with the Chicago Transit Authority and the Pace suburban bus system in connection with single-trip tickets, as well as the Link-Up Passport currently available for monthly ticket holders. A 1939 proposal for the merger of Chicago's then-separate elevated and streetcar companies—not implemented in that form—would have allowed the merged city system to negotiate transfers with commuter railroads such as the IC (*17*). Perhaps the time has come again for a serious look at how such arrangements today might create a win-win situation for Chicago's transit providers and their customers. Innovations in the development of smart cards for transit systems may facilitate improved fare integration (*18*).

In several ways, the Illinois Central Electric was a hybrid of railroading and rapid transit. Although the IC offered railroad-quality speed and comfort, it resembled rapid transit in its frequent service, high platforms, and off-train fare collection. Another similarity to rapid transit was the IC's use of destination signs on its trains. The 1926 cars were built with roll signs, as were the Highliners. However, during the 1980s, management discontinued the use of the signs, and they were left permanently blank. As the Highliners received their midlife rebuilding during the mid-1990s, the signs were removed altogether. But, destination signs would be a welcome addition to any regional rail operation. The Southeastern Pennsylvania Transport Authority (SEPTA) and NJ TRANSIT use front and side signs on their electric commuter trains.

Although no commuter railroads operate with one-person crews, it would not be against Federal Railroad Administration regulations for them to do so. Naturally, it would be necessary to address safety issues by installing failsafe "dead man's" controls to stop the train should the operator become incapacitated. One-person operation will make it vital to have excellent radio communications with central control and other trains (including South Shore Line trains, which will probably continue to operate with full crews for the foreseeable future). Emergency intercoms should be installed on board all cars so that passengers can contact the train operator—and railroad police as well.

Despite the great differences between labor agreements and the overall climate of representation at railroads and rapid transit properties, the Cleveland Rapid's positive experience with one-person operation suggests that it could work on commuter railroads, such as Metra Electric. Most commuter rail labor contracts, however, make no provision for one-person operation, which would have to be negotiated with labor.

In negotiating with its unions, a railroad would need to overcome two obstacles. The first is convincing employees that the aim of one-person operation is not to provide the same (or marginally increased) service with fewer employees. On the contrary, the ability to provide more service because of lower unit costs could stimulate ridership, thus leading to greater job security—and more jobs—for rail employees. For instance, if the three-person crews on Metra Electric's hourly services were each to drive their own trains, this would only provide service on 20-minute headways. Even more employees would be

needed to provide the 10- or 15-minute frequencies comparable with BART, the Lindenwold Line, or even Cleveland's Red Line. Management must not "give away the store," but the new positions will need to be better paying than either the existing wage rates for conductors or engineers because the one-person operator will have more responsibilities.

The other obstacle, which may be more difficult, is that railroad engineers and conductors have separate unions. With one-person operation, train crews would need to choose which union they want. This would cause competition between the two unions for the exclusive right to represent the train operators.

In extreme cases, bitterness between unions may have unexpected consequences for rail operations. One of Chicago's interurbans, the North Shore Line, ran on the Elevated to reach downtown. In the late 1930s, North Shore's crews transferred from the transit to the railroad unions, causing bad feelings between interurban and Elevated employees. Starting in 1942, Chicago's transit workers refused to set switches for the North Shore Line trains. As a result, the North Shore's own crews had to leave the train where their tracks met those of the El, where rapid transit motormen and conductors took over the rest of the way. It took 11 years before a court injunction put an end to these cumbersome arrangements (*19*).

Ill will also arose when the Shaker Heights Rapid Transit became part of the Greater Cleveland RTA's rail system in 1975. Shaker Heights train operators belonged to the Brotherhood of Locomotive Engineers (BLE) and were absorbed into the Amalgamated Transit Union by sheer force of numbers when their property became part of the Greater Cleveland RTA (*20*). Tensions only eased gradually as former Shaker Heights employees retired.

More recently, Via Rail Canada merged its engineer and conductor positions into a single job description in 1997. There was much acrimony between the BLE (representing the engineers) and the United Transportation Union (representing the conductors), as the two unions fought an election to decide which one would be the bargaining agent for all Via operating crews (*21*). There appears to be no way to avoid tension between the unions if jobs are to be merged. All management can do is appeal to the better side of members of both unions and hope for the best.

One warning is in order. The approach suggested here is meant to deliver more service for the same or slightly higher budgets. These methods will fail if they are misused to provide today's indifferent service levels with less money. Instead, the intention is to build a win-win situation for all parties. Management gains greater efficiency, labor enjoys a greater number of more secure jobs, and customers benefit from more frequent service at all hours.

THE TRACK FORWARD

As an almost completely self-contained operation, Metra Electric offers a particularly favorable opportunity for upgrading and revival. This possibility, however, also applies to several other commuter rail lines. Promising candidates for some (if not all) of these innovations include the Port Washington and Babylon branches, the Main Line, and the City Terminal Zone on the Metropolitan Transportation Authority (MTA) Long Island Rail Road, portions of MTA Metro-North Railroad, NJ TRANSIT's Northeast Corridor and Morris and Essex Lines, and such parts of SEPTA's regional rail system as the Airport, Elwyn, Paoli, Chestnut Hill, Lansdale, and Fox Chase Lines. Beyond an approximate limit of about 48 km (30 mi) from downtown, or about an hour's travel time, one-person operation on close headways may be less appropriate. The market may not be there to support such frequent service, and passengers may be accustomed to the more personalized amenities of conventional commuter rail.

Metra Electric, however, remains the most promising candidate for regional rail because it is almost fully self-contained. The more commingled commuter rail is with other trains, the harder it becomes to make the transition to full-scale regional rail. Nevertheless, all commuter rail managements should be willing to consider any elements that would make train operation and fare collection more cost-effective.

The days when the Illinois Central Electric carried three times its present ridership may appear little more than a distant memory. But at its peak, the IC Electric combined high passenger throughput with the finest in 1926 amenities. Even today, Metra Electric has the advantages of high platforms, automated fare collection, an unusually wide range of major travel destinations, and a grade-separated four-track main line of its own without equal in North America.

What market awaits a revived Metra Electric? If the proposed Peotone airport is built, Metra Electric will be ideally situated to provide fast, frequent access directly to Chicago's Loop. Even without the airport, the south suburban corridor should remain a solid (if unprepossessing) market, comparable to the Lindenwold Line's catchment area. Many commuters use what park-and-ride opportunities exist, particularly at University Park, Metra Electric's only true park-and-ride station. Strong parking demand at University Park suggests that if Metra or local officials build more lots, the commuters will come. Perhaps the most important thing local officials can do to help make regional rail happen is to cooperate with transit officials in assembling land for parking.

The challenge is greater in the city. Some of yesteryear's ridership markets have simply evaporated. The collapse of South Chicago's once-flourishing steel industry, for instance, has undermined much of the former ridership base in that neighborhood. All across Chicago's South Side, changes in the social composition of many neighborhoods resulted in the postwar abandonment of stations at 31st, 35th, 39th, 43rd, 67th, 72nd, and 130th Streets. Much of the market that the Blue Island trains serve is marginal beyond 59th Street and may not support more than the half-hourly headways operated in the mid-1970s—even with one-person operation.

Yet, there remains a large potential market for Metra Electric that has barely been tapped. The Jeffery Express bus, which runs close to much of the main line through Hyde Park and the South Chicago branch, is one of Chicago's busiest bus lines. The bus provides the same frequent service that the Illinois Central Electric did half a century ago. If express bus passengers take an improved train instead, the financially pressed CTA could reallocate buses to other routes where there is no alternative rail line.

The inner portions of Metra Electric are priced appropriately for the urban market. Even though one-way fares are somewhat higher than the bus, the train certainly offers much better value, particularly during peak hours. Within the first two fare zones (which include the entire South Chicago branch), a monthly ticket on Metra is cheaper than the bus, even with the CTA's multiple-ride fare cards (sold at a discount). If transfers were made available so that rail customers could change to and from connecting bus routes, the train would be in an excellent position to recapture much of the express bus market.

To sum up, the benefits of modern regional rail are

- Greater efficiency and lower unit costs,
- More jobs with better security, and
- Much more service to customers.

Assuming that a careful analysis shows that communities en route will support regional rail service, the following steps will allow commuter railroads to move toward one-person operation:

- Electrify the line (if this has not already been done).
- Install high platforms throughout the electrified zone.
- Implement a form of fare collection compatible with one-person operation, such as turnstiles or proof of payment.
- Negotiate one-person operation with the unions (whose members will have to decide whether the conductors' or engineers' union will represent them).
- Retrofit trains with full-width cabs for one-person operation, including dead man's controls and any other safety devices as appropriate. Equip interiors of cars with emergency intercoms for passengers.
- Instruct engineers and conductors in the duties of the train operator's position.
- Implement one-person operation with greatly improved headways. This should be done in an incremental fashion in order to provide for an orderly transition.
- Finally, once one-person operation is working smoothly, market the improved system for all it is worth. A railroad that has made it to this point will be the equal of the Lindenwold Line or BART in the intensity and the quality of service that its customers enjoy.

If Metra Electric's service is better coordinated with other transit services, and operated at near–rapid transit headways, it should be able to reestablish itself as the mode of choice in the major travel corridor it serves. By the first third of the 20th century, investors confident of the future had made the Illinois Central Electric and its peers in New York and Philadelphia into commuter railroads of the highest order. These systems were the BARTs and Lindenwold Lines of their day as far as speed, service, and comfort were concerned. By building on these accomplishments, today's transit officials have the opportunity to give their customers tomorrow's finest transportation on an affordable budget.

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