

Lessons Learned From the Chicago O'Hare Modernization Program



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Transportation

Acknowledgements

On October 27, 2011, The Eno Center for Transportation joined the Chicago Department of Aviation to present the day-long seminar *Lessons Learned from the Chicago O'Hare Modernization Program* to more than 70 attendees from across the country hoping to learn and implement ideas into their own large infrastructure project. This paper includes a detailed account of the day's proceedings.

Lessons Learned from the Chicago O'Hare Modernization Program would not have been possible without the support and encouragement from several individuals and organizations. Specifically, we are grateful to Rosemarie Andolino, Commissioner of the Chicago Department of Aviation, for her work in partnering with us on this project. Commissioner Andolino and her staff played an essential role in ensuring the event's success. It was through the Chicago team that we were able to secure numerous speakers and panelists who gave of their time and shared their experiences.

We would like to thank the Honorable Rahm Emanuel, Mayor of the City of Chicago, for serving as our keynote speaker and bringing attention to this project. Government support is key to both starting and finishing projects, especially those with such great risks and rewards. And to Lester Crown, former Chairman of the Commercial Club of Chicago, without his help and support this project would never have been such a success.

We also want to thank Aaron Gellman, Professor of Management and Strategy at Northwestern University. It was Prof. Gellman's work with us and the airport that made this event a reality. We also want to give thanks to Eno Board member David Plavin who provided beneficial guidance in shaping the program and its panels, as well as assisting in this paper.

And finally, we want to thank former Eno board member and long-time friend, Tom O'Bryant. This event was possible because he had the idea that this was a success story worth highlighting.

Joshua Schank
President, Eno Center for Transportation

A handwritten signature in black ink, appearing to read 'Josh Schank', written in a cursive style.

Table of Contents

"I hope that [the O'Hare Modernization Program] is not only a model for you, as you look at a major infrastructure project and civil engineering projects ...but it is also a lesson for us on how we want to approach other major infrastructure investments."

-Rahm Emanuel
Mayor, City of Chicago

Introduction	1
Current State of the Program	1
From Concept to Reality: Building Support	3
Political Maneuvering and Construction Planning	6
Convincing DuPage County	6
Bensenville Decides to Work With the Modernization Program	6
Atlanta's Airport Expansion	8
Environmental and Regulatory Review Process, the FAA	8
Securing Finances	10
Role of the Airlines	10
Summary	10
Construction and Operation	11
Current State of Construction	11
Leadership and Coordination	12
Sustainability	12
Project Delivery and Results	13
Lessons Learned	14
Building a Deep-Rooted Consensus is Vital to Moving Forward	14
Maintaining Support Through Transparency, Accountability and Intermediate Deadlines	15
Convincing the Federal Government That the Problem is of Nation Significance	15
Being Proactive on Completing All Regulatory Filings	16
Long-Term and Strong Leadership Helps Keep a Consistent Plan	16
Financing Scheme That is Politically Feasible and Stable	16
Comprehensive and Forward Thinking Planning	17
Conclusions	17
About Eno	18

Introduction & Overview

“This accomplishment shows what can be done if all different public entities get together and do what is right for the region.”

- Lester Crown

Former Chairman of the Commercial Club of Chicago

Industry experts and the general public alike are skeptical of success when it comes to large-scale infrastructure projects. This skepticism is reinforced by a reality facing the industry: “Both older and more recent projects have been marked by a consistent pattern of substantial cost increases between authorization and completion.”¹ Not only do projects often cost more but schedule delays, plan changes, and other factors can disrupt project completion and even leave key elements of the program unfinished.

Not all mega-projects are subject to the same fate, however. The modernization project at O’Hare International Airport in Chicago is an example of a modern transportation investment that is performing well. The multi-billion dollar project at O’Hare has managed to finish key aspects of the work under budget and ahead of schedule. Streamlining efforts have ensured that the project received a timely review process and was not delayed by federal regulatory requirements. The success of the O’Hare Modernization Program (OMP) is one in which much can be learned. Applying the lessons from the OMP can help construct other large, important infrastructure projects in a timely and fiscally responsible manner.

While still in the middle of construction, leaders at the Eno Center for Transportation decided to highlight the airport’s progress and gathered elected officials and transportation leaders involved in the OMP. On October 27, 2011, Eno partnered with the Chicago Department of Aviation to bring some of the OMP key players together to discuss their experiences. This report summarizes the lessons from the OMP to date, drawing from the experience and insights from the panelists and other resources and shows what can be applied to other organizations that want to undertake an infrastructure project of this magnitude.

Current State of the Program

Chicago’s O’Hare International Airport was originally developed to relieve congestion at Chicago’s Midway Airport and to help increase mobility in the region. As time progressed, Midway evolved into the secondary airport while O’Hare became a major national and international hub. However, as air traffic expanded in the 1970s and 1980s, the airport did not. By the mid-1990s the airport was operating at capacity and any disruption in service, especially weather related, strangled air traffic in Chicago and sent a wave of delays across the national and international aviation system.

The response to this impending crisis was the O’Hare Modernization Program (OMP), a \$6.6 billion series of projects intended to increase the capacity of the airport.² Conceived in 2001, construction began in 2005 and has outperformed similar large infrastructure projects by adhering to the schedule, costing less than the budget, and enjoying broad public support. While many consider the OMP a success, this undertaking has overcome many significant obstacles both prior to and during construction. The multi-billion dollar program has managed to progress while being surrounded by a polarizing political climate, ample environmental concerns, and construction during the ongoing operation of one of the world’s busiest airports.

Many industry leaders see this as remarkable given today’s infrastructure track record of cost overruns and constant delays, especially with projects of this magnitude. Chicago Department of Aviation Commissioner Rosemarie Andolino put the scope of the program into perspective:

For Chicago, the OMP is a very large construction program. Chicago Mayor Daley first announced the program in June of 2001. Following the spirit of visionary planners in Chicago’s history, such as Daniel

¹ Altshuler, A., Luberoff, D. (2003). The Changing Politics of Urban Mega-Projects. *Lincoln Land Institute*. Retrieved January 12, 2012, from www.lincolnst.edu

² About the O’Hare Modernization Program. *City of Chicago Department of Aviation*. Retrieved October 27, 2011, from www.cityofchicago.org

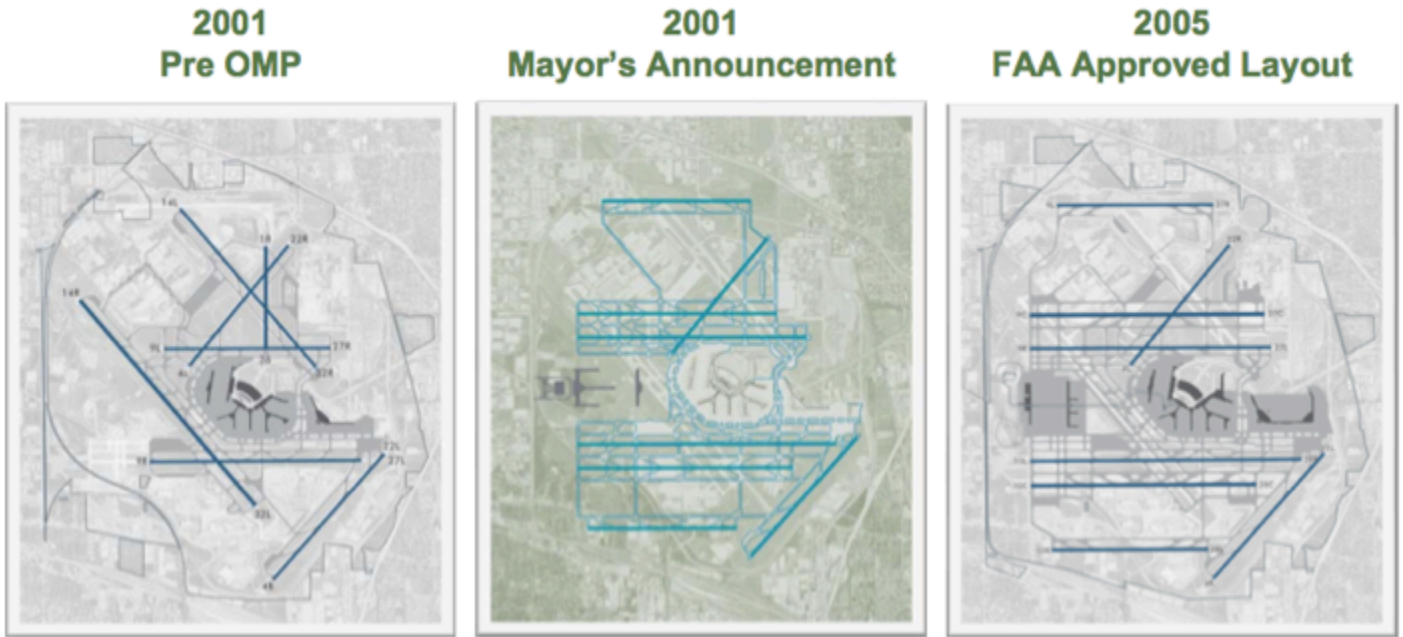


Figure 1: OMP Runway Layout.⁵

Burnham, the mayor made no small plans for the future of O'Hare. The OMP would not just be a short-term solution to address O'Hare's pertinent delay and congestion problems. We were not just adding one runway, we would completely realign and modernize O'Hare's airfield and increase its efficiency, capacity and safety for its future.

As it was arranged in 2001, the OMP will reconfigure the airport's dated intersecting runway configuration into a more modern layout of parallel runways. The project will eliminate two intersecting runways while adding four new runways and enhancing two existing runways resulting in six parallel E-W runways.³ The project is expected to stay within the original estimate 2001 estimate of \$6.6 billion and is being constructed in phases, with the first phase to be completed in 2013. Two of the first three runway projects were completed in 2008, with the third scheduled for completion in 2013. A fourth runway will come online in 2015. The remaining two runway projects and a proposed western terminal have not yet been funded, and the runway projects are anticipated to come online before 2020 – the western terminal will be demand-driven. The new configuration will increase capacity by 60 percent and is expected to substantially reduce delays in all weather conditions.⁴

The OMP contains plans that include the western terminal that would enable for "Western Access," a series of improvements on the western side of the airport that includes transportation enhancements. Western Access would provide a direct link to the surrounding suburban areas of DuPage County that currently do not have any direct connection.

The project entails building additional air traffic control tow-

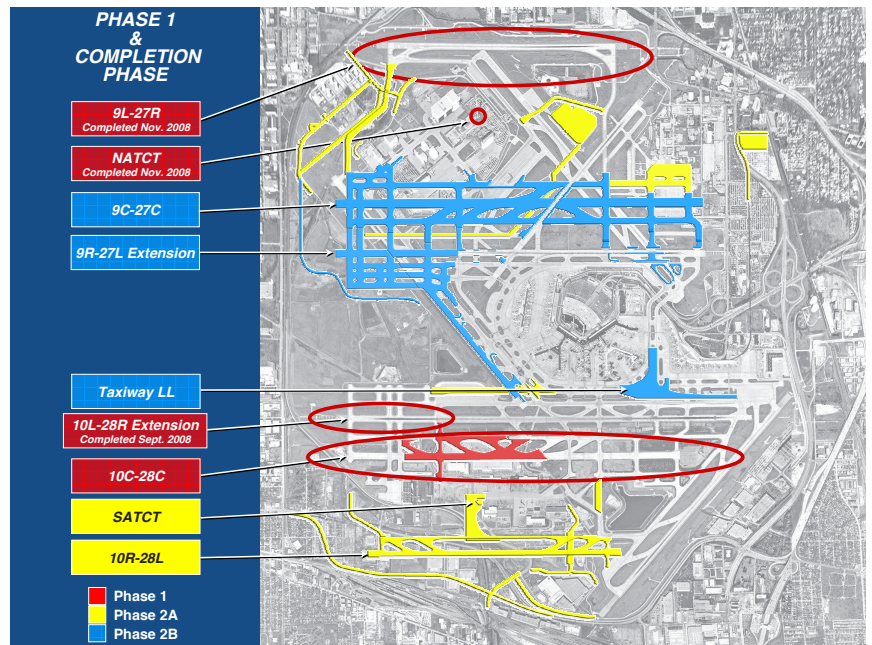


Figure 2: OMP progress as of October 2011 (chart courtesy of CDA).

³ City of Chicago Department of Aviation

⁴ City of Chicago Department of Aviation

⁵ Naja, Khaled. (October 27, 2011). *Constructability, Sustainability and Technical Panel: How Were These Barriers Overcome?* Presented at the Eno Center for Transportation forum, Chicago, IL.

ers, 433 acres of land acquisition, and the relocation of multiple airport structures. Figure 1 shows the layout of the expansion and Figure 2 shows the current state of the program.

The most remarkable aspect of the OMP is the progress it has seen over the past 10 years since the release of the original plan from Mayor Richard M. Daley. Between the release of the plan in 2001 and the start of construction in 2005, the OMP managed to gain support from both city and suburban elected officials and residents; clear federal and regional environmental regulations; strike a deal with home and business owners whose land was acquired; secure stable funding sources; and design and engineer plans that would allow for massive construction projects during the safe and efficient operation of one of the world's busiest airports.

From Concept to Reality: Building Support

To construct any infrastructure project, especially large projects, there must be support from the affected communities. Chicago's OMP was no exception and the political barriers that needed overcome were complex and daunting. The largest political barrier was the airport's location: three-fourths in Cook County (which contains Chicago proper), and the remaining quarter in DuPage County, which is the suburban county west of the City of Chicago.⁶ This set the stage for the city-suburb battle with the airport in the center of the dispute.

For most of the 1990s, the political differences between the city and the suburban communities surrounding the airport stalled the project. The conservative residents of the suburbs saw the airport as a city asset from which they received little benefit and therefore they vehemently opposed any discussion of airport expansion. In fact, DuPage County is the stronghold for the Illinois Republican Party and any Republican candidate for Illinois governor needed to have the county's vote to win an election. This caused a deadlock for discussion of airport expansion: "State law requires the approval of the governor for new runways at O'Hare—a legal weapon the Republicans have used to block O'Hare expansion."⁷ While state law no longer requires approval for runway construction Illinois, this was a major hurdle for the initial stages of the program.

As the county opposed the expansion, any Republican gubernatorial candidate had to run on the platform opposing the expansion. As the Republicans held control of the Governor's office from 1977 until 2003, this eliminated support from the state.⁸ During this time the airport suf-



Lester Crown, Former Chairman, Commercial Club of Chicago

fered increasing congestion, and future traffic growth threatened the success of the airport and the regional economy.

In 1999 Chicago's business leaders at the Commercial Club of Chicago released the "Chicago Metropolis 2020" publication, a look at the Chicago region in 2020.⁹ In this report the transportation recommendations stated that O'Hare had to be expanded to account for projected economic growth. To strengthen this argument, the Commercial Club of Chicago contracted with Booz Allen Hamilton to conduct a regional economic study to show the importance the airport to the region. According to this study and published statistics on the City of Chicago website, the OMP is expected to create additional time savings for airlines and passengers and stimulate the regional economy:

The [Booz Allen Hamilton] study confirmed that O'Hare is the economic engine of the Chicago region, contributing about \$37 billion annually and over 400,000 jobs to the economy.¹⁰

A modernized O'Hare means the creation of 195,000 more jobs, and another \$18 billion in annual economic activity. The OMP is expected to save the airlines approximately \$375 million and passengers \$380 million a year.¹¹

This data provided the needed economic research to inform the public of the magnitude of the airport's significance and

⁶ Schillerstrom, R. (October 27, 2011). *How Were the Political Barriers Overcome?* Presented at the Eno Center for Transportation forum, Chicago, IL.

⁷ Hilkevitch, J. Dorning, M. (April 26, 2001). FAA Steps In to Help Settle O'Hare Crisis. *Chicago Tribune* (Chicago, IL), p. 1. Retrieved November 30, 2011, from *Chicago Tribune Archives*

⁸ Schillerstrom, R.

⁹ Johnson, E. (1999). Chicago Metropolis 2020. *Commercial Club of Chicago*. Retrieved November 30, 2011, from www.chicagometropolis2020.org

¹⁰ Aviation Initiatives. (2011). *Commercial Club of Chicago*. Civil Committee. November 30, 2011, from www.civiccommittee.org/initiatives/aviation.html

¹¹ City of Chicago Department of Aviation

guide the controversial discussion of expanding the airport. The next step was to bring the key players on board.

With the data and statistics from the Booz Allen report, the Commercial Club reached out to its members to encourage them to write to editorial boards and newspapers to communicate the need for O'Hare expansion.¹² There was a tremendous response from this group and many wrote about the costs of delay at O'Hare for their employees, visitors, and goods coming in and out of the region.

While the business community was on board, Chicago Mayor Daley's office was quiet. Lester Crown, then Chairman of the Chicago Commercial Club, recounted the process of convincing the Mayor that O'Hare expansion was vital. According to Crown, initial conversations went nowhere: "Talking to the Mayor was like talking to a sphinx."¹³

While the business community had a generally good relationship with the Mayor, the non-commitment from Daley was particularly frustrating. Mayor Daley would give no indication as to whether he supported or opposed the expansion. But in 2001, Iowa Senator Tom Harkin (D) came to Chicago to listen to concerns about the airport. After the meeting, Sen. Harkin left to face reporters waiting outside. "He [Sen. Harkin] looked at the media and said, "If the City of Chicago does not solve this problem, the Federal Government is going to," Crown said.¹⁴



Figure 3: 2001 Business Support for O'Hare Expansion.¹⁶

Soon after the Commercial Club bought two pages of advertising in all of the Chicago's newspapers with an open letter to local, state, and federal officials proclaiming the need for O'Hare expansion. More than 50 companies signed this letter; and with the media coverage and pressure on Chicago to tackle the problem, Mayor Daley indicated his support. "What galvanized the mayor was the threat of federal intervention," Crown said.¹⁵

With the Mayor's support, the city hired a group of airport expansion experts and within 30 days of Sen. Harkin's visit, the Mayor's office produced a preliminary expansion plan (see Figure 1).

Speakers & Panelists

Rosemarie S. Andolino

Commissioner, Chicago Department of Aviation

MarySue Barrett

President, Chicago Metropolitan Planning Council

Michael Boland

1st Deputy Commissioner, Chicago Department of Aviation

Keith Brune

Deputy Director of Aviation – Operations & Facilities, Philadelphia International Airport

John Carpenter

Sr. VP of Public Policy, Chicagoland Chamber of Commerce

Jim Chilton

Program Manager, DMJM Aviation Partners

Lester Crown

Former Chairman, Commercial Club of Chicago

Ben DeCosta

Former Director, Atlanta Hartsfield Jackson International Airport

Christina Drouet

Chicago Area Modernization Program Office, FAA

Rahm Emanuel

Mayor of the City of Chicago

Aaron Gellman

Professor, Northwestern University

Khaled Naja

Chief Operating Officer, CDA

David Plavin

President, dzp Consult, Inc.

Ramon Ricondo

President, Ricondo & Associates

Joshua Schank

President and CEO, Eno Center for Transportation

Robert Schillerstrom

Former Chairman of the DuPage County Board

Michael Schneiderman

Outside Counsel, OMP

Joseph Schwieterman

Professor, DePaul University

Frank Soto

Mayor Village of Bensenville

¹² Crown, L. (October 27, 2011). *Lessons Learned from the O'Hare Modernization Program*. Presented at the Eno Center for Transportation forum, Chicago, IL.

¹³ Crown, L.

¹⁴ Crown, L.

¹⁵ Crown, L.

¹⁶ City of Chicago Department of Aviation

Political Maneuvering and Construction Planning

Politics and planning dominated the four-year period between when the Mayor announced his plan in 2001 and the beginning of construction in 2005. Having the Mayor on board was an important step but there were other large political barriers that had to be overcome.

Mayor Daley knew that to move the OMP from concept to reality the city would have to build a regional consensus on this project moving forward. His plan included aspects that were attractive to multiple constituencies, such as Western Access for Chicago's suburban neighbors, multi-modal transportation options, and reduction of the noise contour, and strong commitment to mitigate any negative environmental impacts.¹⁷

To move the project forward, the Mayor needed the support of then-Illinois Governor George Ryan, a Republican and close ally with suburban DuPage County. With the county long opposed to airport expansion, convincing the people and the elected officials to change position was a difficult and daunting process.

Convincing DuPage County

"You cannot just have surface support; you have to have deep support."

Robert Schillerstrom

Former Chairman of the DuPage County Board

Suburban and Illinois Republican stronghold DuPage County had traditionally been opposed to any expansion of the airport. The belief was that the airport was Chicago's asset and the suburban county did not see any benefit from expansion. To complicate matters, the land for O'Hare airport is one-quarter in DuPage County yet the county did not have any direct access to the Airport. Former County Chairman Schillerstrom recounted the political struggle between DuPage and Cook County as "city versus suburb" and the County opposed O'Hare expansion because they "had always been opposed."¹⁸

However there was a remarkable transformation of political

position in DuPage County. Today the county supports the airport and is working along with the OMP to ensure the project's completion and that the County's interests are upheld. This transformation started with recognition by elected officials that DuPage County and its suburban businesses and neighborhoods were in fact economically tied to the success of Chicago. They realized that in the long term they were better off as partners with the City and the OMP. This recognition led to the County cooperating with the OMP to increase the benefits from the project. The Western Access aspect of the program, championed by DuPage County, was exactly that. With direct access to one of the world's busiest airports, the County could position itself for more business development and economic activity.

Mayor Daley was instrumental in bringing DuPage on board.¹⁹ He worked to create relationships of common interests and find out how the county could benefit from the project in order to gain their support. This delicate issue was handled by building trust and personal relationships over time with the community leadership. He spent time with elected officials in the county and worked to find things that they had in common. Reflecting on the experience, former DuPage County Chairman Schillerstrom remarked that these changes need cooperation from all involved parties. Leaders need encouragement to communicate and have open minds and both sides need to take chances on new ideas.

Bensenville Decides to Work With the Modernization Program

"Being good neighbors and cooperation eliminates so much turmoil and trouble."

Frank Soto

Mayor, Village of Bensenville

At the center of the political fight was suburban Bensenville, a town bordering the airport in DuPage County. A sizable section of the town was directly in the way of the two southernmost proposed runways, and the OMP would require the acquisition and demolition of hundreds of homes and businesses in the town. Because of the immediate threat to

¹⁷ Andolino, R. (October 27, 2011). *Lessons Learned from the O'Hare Modernization Program*. Presented at the Eno Center for Transportation forum, Chicago, IL

¹⁸ Schillerstrom, R.

¹⁹ Schillerstrom, R.

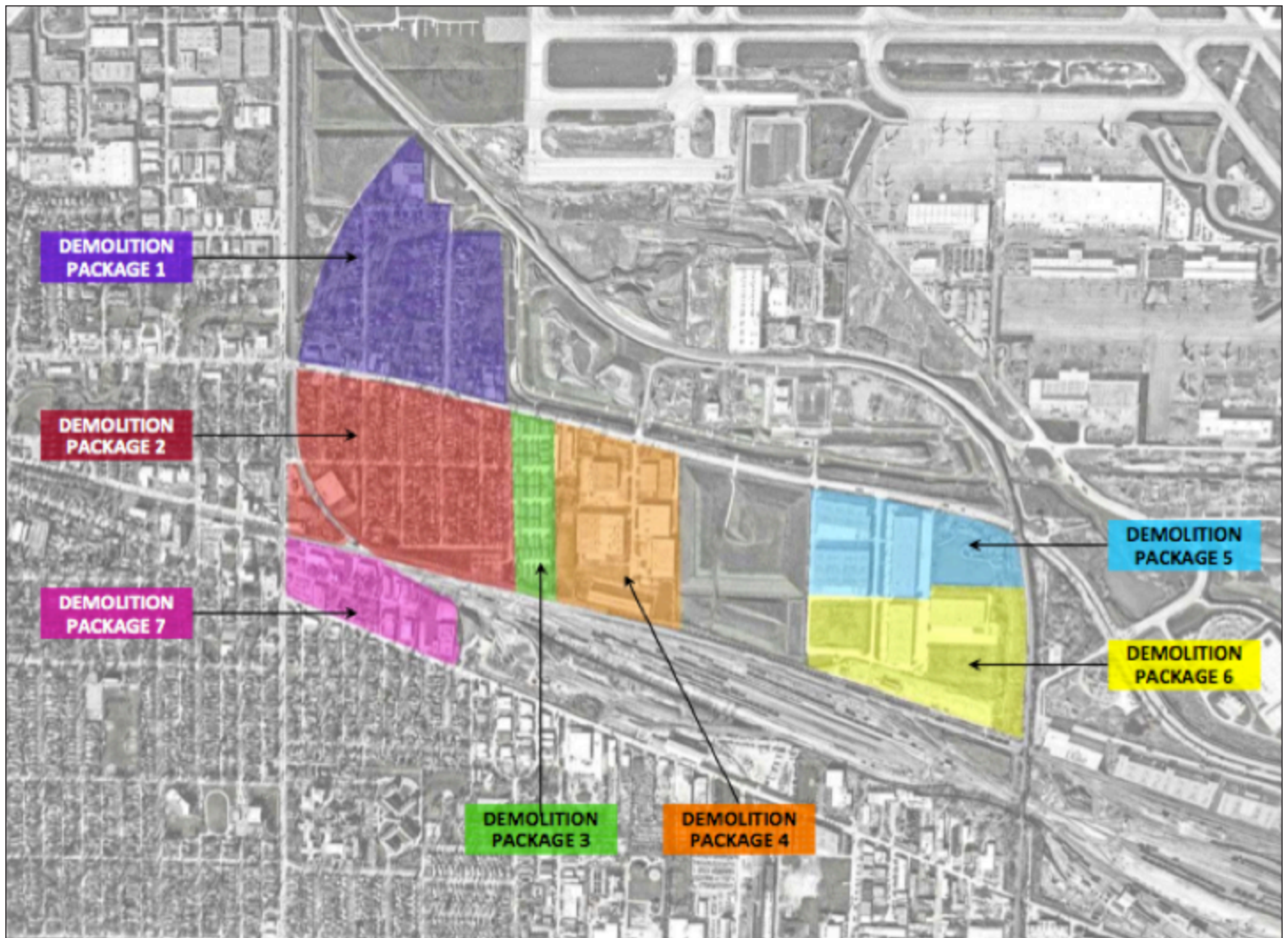


Figure 4: Demolition zones in the City of Bensenville.²⁰

local property owners, Bensenville had long been opposed to any expansion of O’Hare and the Village initiated the majority of the lawsuits against the OMP.²¹ After many failed attempts to stop the expansion through litigation, however, Bensenville was willing to take an alternative approach. It was clear that the OMP was a public works project that was going to happen regardless of litigation attempts and it appeared that it was in the interest of all to resolve issues by working together. In April of 2009 residents elected Mayor Frank Soto by more than a 2-1 margin, who ran on the platform of facing reality and taking an active role to work with the airport expansion program instead of opposing it.²²

The first thing Mayor Soto did once elected was to begin the process of mending fences and building a relationship between Bensenville and the OMP. “What occurred

in Bensenville was somewhat of a transformation but that transformation started with actually telling people the reality of what we were dealing with,” Soto said.²³ The Village was best positioned to cooperate and make deals that would get them the most out of a tough situation. Bensenville became the primary proponent of Western Access, which will eventually give this suburb and DuPage County direct access to the airport.

The Mayor’s tenure coincided with the demolition of more than 600 homes and businesses to make way for two runway projects on O’Hare’s south end. Because of cooperation the owners received fair compensation and there were no complaints filed during the demolition process. Areas of demolition in Bensenville are shown in Figure 4.

²⁰ Naja, K.

²¹ Soto, F. (October 27, 2011). *How Were the Political Barriers Overcome?* Presented at the Eno Center for Transportation forum, Chicago, IL.

²² Tribune Staff. *Clout Street*. Retrieved November 30, 2011, from www.newsblogs.chicagotribune.com

²³ Soto, F.

Atlanta's Airport Expansion

Building trust and cooperation with affected constituents and citizens is not unique to the Chicago O'Hare International Airport. Most large infrastructure projects require land acquisitions and impose unforeseen costs on area residents and businesses. Ben de Costa, former Airport Director at Atlanta's Hartsfield Jackson International Airport, was invited to Eno's October 2011 conference to share his experience and draw both similarities and difference between the two airport expansion programs. He recounted his experience in working with locals to successfully expand the Atlanta airport.

Building trust with the stakeholders was crucial to the success. Not only did it satisfy the needs of the constituents but it helped reduce litigation, which can easily stall a project. As with many large infrastructure projects, starting and stopping the construction and planning process can be costly and any way to reduce these delays can significantly help control budgets. Additionally, working with local elected officials can help

You have to engage people in person in a way that will make them appreciate the message.

- Ben DeCosta



change or pass new laws that make it easier for large construction projects to proceed.

De Costa pointed to a memorable town hall meeting that was called to discuss the project. He entered into a tense room with a potentially hostile crowd that was unhappy about the proposed expansion that could take their homes and businesses. De Costa started the meeting by stating he was there to answer any questions and would stay as long as it took to answer them. De Costa promised he would be the last person to leave the building and after a long night all questions were addressed. Not everyone was happy but there was a level of trust built; it was evident to the people

that de Costa did care about their concerns. "It was that night and that engagement with all of these hundreds of people that proved to the elected officials who watched the show and to the people that they had a person that they could trust that changed it. So that put us on the road to the approvals for the condemnation rights."²⁴

Environmental and Regulatory Review Process, the FAA

Special action was taken in regard to the federal regulations and permitting for program approval. The regulatory and planning process that starts before a project begins construction can often take many years and in some cases decades.

While many projects are stalled in the regulatory process, the OMP managed to go from sketch to construction in a remarkable four years. One factor that greatly helped the project was the Federal Aviation Administration's (FAA) opening of a regional office in the Chicago area in 2003:

The Federal Aviation Administration (FAA) has established a Chicago Area Modernization Program Office to oversee and coordinate its activities related to the O'Hare modernization project and other airport projects in the Chicago area.²⁵

This Program Office coordinated and continues to coordinate the efforts of all FAA internal divisions involved in work associated with the project, and acted as a single point of contact for the FAA with the airport project sponsors. This helps with direct communication between the FAA and the OMP and ensures that there is fluid communication. Within the Chicago FAA Program Office, special measures

²⁴ De Costa, B. (October 27, 2011). *What Lessons Can Be Drawn For Airports and Large Transportation Projects?* Presented at the Eno Center for Transportation forum, Chicago, IL.

²⁵ Molinaro, T. (2003). FAA Creates Chicago Area Modernization Program Office to Coordinate Oversight of O'Hare and other Airport Projects. *Federal Aviation Administration*. Retrieved December 16, 2011, from www.faa.gov/news/press_releases

TYPICAL DEVELOPMENT PROCESS¹



STREAMLINED DEVELOPMENT PROCESS

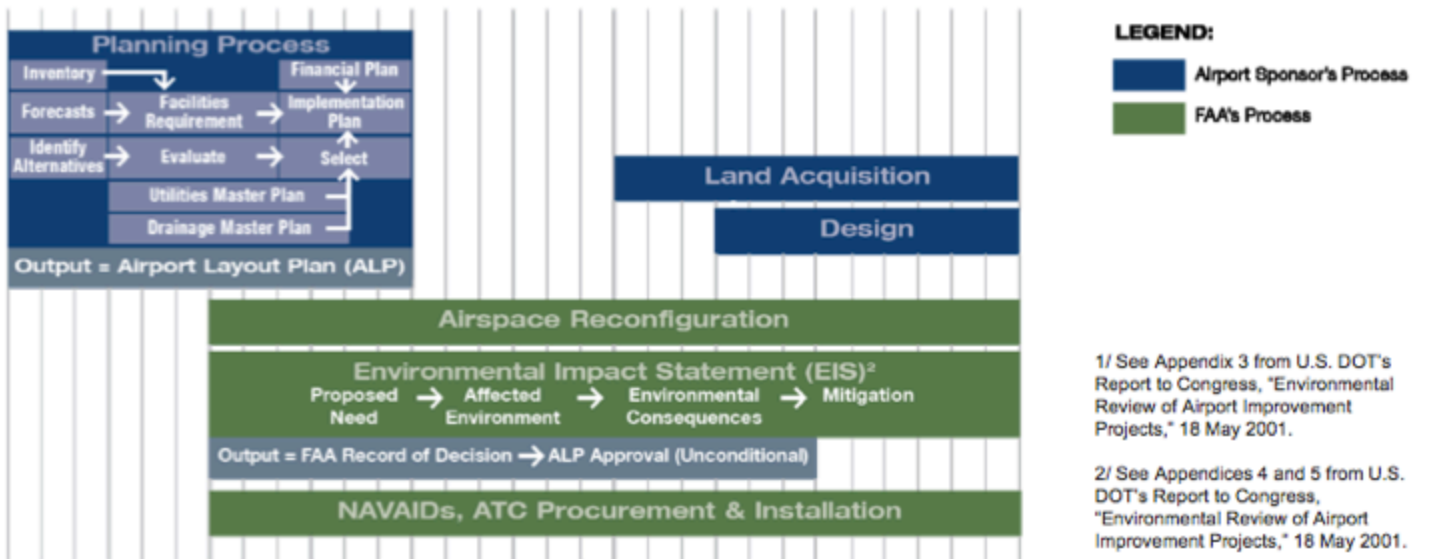


Figure 5: O'Hare Modernization Program Streamlining Process (Slide courtesy of the Chicago Department of Aviation).

were taken to ensure that the program received expert attention.

To help streamline the process with the city's cooperation and collaboration was to hire very specialized staff during that environmental process. They were on the board around the clock... to meet a very compressed timeframe on that environmental phase of the overall program.²⁶

With an FAA office nearby, the OMP implemented a streamlined development process where the FAA and Airport Research processes were expedited, as shown in Figure 5. Much of the streamlining came from within the Airport process where they made sure to prioritize issues and avoided continually changing the plan structure.²⁷ The development process used at the OMP did not exactly expedite the FAA part of process but focused on altering the process done at the Airport. The airport planning process was intertwined

with the federal process, allowing key regulatory elements to proceed before the airport's process was completely finished. This allowed for more collaboration and feedback between the agencies and thus reduced the overall planning and permitting process significantly.

In addition, the airport planners were careful in preparing the Environmental Impact Statement (EIS), a required regulatory document that is needed for federal project approval. Most of the efficient streamlining can be credited to the planners who made sure everything was considered and made the report easy for the FAA to approve.²⁸ "You had to talk about community livability impacts, economic development opportunities, environmental improvements... it's not enough to measure congestion and gridlock."²⁹ The planners considered emissions, wetlands, sounds, and other impacts that are often overlooked or unaccounted for in

²⁶ Drouet, C. (October 27, 2011). *Constructability, Sustainability and Technical Panel: How Were These Barriers Overcome?* Presented at the Eno Center for Transportation forum, Chicago, IL

²⁷ Ricondo, R. (October 27, 2011). *Constructability, Sustainability and Technical Panel: How Were These Barriers Overcome?* Presented at the Eno Center for Transportation forum, Chicago, IL

²⁸ Schneiderman, M. (October 27, 2011). *Constructability, Sustainability and Technical Panel: How Were These Barriers Overcome?* Presented at the Eno Center for Transportation forum, Chicago, IL

²⁹ Barrett, M. (October 27, 2011). *What Lessons Can Be Drawn For Airports and Large Transportation Projects?* Presented at the Eno Center for Transportation forum, Chicago, IL

large projects. The thorough process made sure the OMP was always one step ahead of the requirements so there were no surprises and difficulties. According to those involved, this approach helped the OMP win every court case because they anticipated and addressed potential issues before they became problems.³⁰

Securing Finances

The funding for the OMP came from politically feasible and reliable sources, with no local or state tax dollars used in financing the project.³¹ The following sources were used for the program, securing \$4 billion dollars as of October 2011:

- Passenger Facility Charges (PFC)
- General Airport Revenue Bonds
- Federal Airport Improvement Program Funds

According to Michael Boland, 1st Deputy Commissioner for the Chicago Department of Aviation, these funding sources are typical for airport expansion programs. PFCs and General Airport Revenue Bonds were approved to provide base funding and the OMP was very successful in securing discretionary money from the Airport Improvement Program (AIP). This money is available on a competitive basis to airport improvement projects that have national significance. “This is where Chicago has done well,” Boland said. “For the discretionary money that enhances the national system, Chicago has gotten in excess of \$950 million.”³²

Role of the Airlines

Support from the two hub carriers at O’Hare, American Airlines and United Airlines, was essential for moving the project forward. The airlines were directly affected by the congestion delays leading up to the start of the project and they were very involved with the business community in working to convince the public and the elected officials of the need for the program. Using their size to their advantage, the airlines effectively argued that their operations were hindered by capacity constraints and without real action business growth and employment would be moved to other regions.

Not only was their commitment strong from the start, it remained strong throughout the process. The program was announced with their support in July 2001, which was followed by financial stress for the airline industry. Events after the announcement included the September 11, 2001, terrorist attacks, a recession, and United Airlines filing for bankruptcy protection in 2002. Even in the difficult times the airlines

showed remarkable commitment, pledging support for \$1.9 billion in general airport revenue bonds paid for with passenger fees.

In addition to supporting the project financially, the city and the airlines engaged in a collaborative working environment so as to not negatively impact their operations. They were involved from the initial planning and are close partners with the OMP. The airlines will continue to play a major role in the completion of the project, as their support and financial contributions depend on the budgetary and schedule performance of the program.



American Airlines flight landing at Chicago O’Hare.

Summary

The politics and planning barriers that the OMP faced were such that few imagined real progress. However with the initial leadership of the business community, discussion of expansion started and eventually elected officials in the region became supporters. Key stakeholders in negotiating the political support included the business community, the City of Chicago led by Mayor Daley, DuPage County and the leaders of the cities surrounding the airport, the major airlines operating out of Chicago, and the federal government led by the FAA. “The political climate changed in such a way that it went from being a wildly unpopular position to be advocating politically and publically for runways to the right place to be.”³³

While political support and planning were necessary, executing the plan and maintaining support during the construction were equally important and challenging. The next section outlines the current progress and the challenges that were surmounted since groundbreaking in 2005.

³⁰ Schneiderman, M.

³¹ Naja, K.

³² Boland, M. (personal communication, January 2012).

³³ Boland, M.

Construction & Operation

“The easy part is building a runway. The great challenge is safely moving things out of the way.”

James Chilton

Program Manager, DMJM Aviation Partners



OMP runway system as of October 2011 (photo courtesy of the Chicago Department of Aviation).

Current State of Construction

As of the writing of this report, construction of the OMP has progressed over the past six years, staying on schedule and slightly under budget. The three completed projects include a 3,000-foot extension of the busiest runway at O'Hare, a new runway in the northern part of the airport, and a new air traffic control tower. These projects were completed on or ahead of schedule and collectively were \$40 million under budget. According to the City of Chicago's website, these projects have already contributed to a "considerable and positive impact on airport operations."³⁴

Currently a new runway is under construction that, when finished, will be able to accommodate large aircraft such as

the Airbus A-380 and the Boeing 747-8. Other smaller projects are underway that will allow for the final construction of two additional runways, the extension of an existing runway, and a direct connection to DuPage County through Western Access.

These projects require considerable planning and care because construction happens while the airport is in operation. The most important aspect of this program has been the plan, a process that began in 2002. The plan had to be comprehensive so that it could be safely implemented and subsequently approved by the FAA yet flexible enough to account for unforeseen circumstances that arise during any construction project. While the planning was completed

³⁴ City of Chicago

mostly before construction began, there were many elements of the plan and its implementation that were essential to ensuring that the construction progressed in a timely and effective manner.

Leadership and Coordination

“From a technical standpoint, the most important aspect of any project is the plan.”

-Ramon Ricondo
President, Ricondo Associates

In order to design and implement the construction process, the OMP spent significant resources to attract top talent and experienced leaders to all aspects of the program.³⁵ The City of Chicago hired a program manager to oversee the construction and the permitting process, and to make sure that things stayed on schedule. The Chicago FAA office, which was opened to oversee the program, hired the best experts in the field to make sure that this internationally important program was not held up with regulatory problems.³⁶ Airport Commissioner Rosemarie Andolino was crucial to this leadership, and her management skills ensured that all parties worked together.³⁷

In addition to having good leaders, coordination between them was also important. With many actors involved in the successful completion of projects, the leaders of different sectors had to cooperate and coordinate to make sure that things moved safely and effectively forward. It was the responsibility of the OMP leaders to resolve disputes between contractors and other organizations before using the City Government, which can be a costly and time-consuming process.³⁸

While support from the Chicago region was necessary to move the project forward, it was also necessary to have federal help. The OMP has close ties with the federal government, even more so in the past few years. From the start the OMP got attention because of the great need. O’Hare is one of the largest and busiest airports in the world and is essential in the national and international air traffic systems. Delays in Chicago affect airports nationwide and the situation



President Obama has been a strong supporter of the OMP

at O’Hare was beyond critical capacity when Daley officially proposed expansion in 2001. Thus federal officials knew that this project was of national significance and needed direct attention.

A few years after construction started in 2005, the former Illinois Senator Barack Obama was elected President, which effectively enhanced federal support for the OMP. There came a point where multiple factors were threatening to significantly stall the project. Officials including Secretary of Transportation Ray LaHood, an Illinois native, Illinois Senators Richard Durbin (D) and Mark Kirk (R), then-Congressman and now Chicago Mayor Emanuel and others with Illinois ties can be credited with making sure that construction continued.³⁹

Sustainability

“What was green yesterday is common practice today.”

Khaled Naja
Chief Operating Officer, Chicago Department of Aviation

During the construction process the OMP initiated a sustainability program that addressed the environmental impacts of the program. This initiative was implemented in a way that added a sustainable design element without incurring addi-

³⁵ Chilton, J. (October 27, 2011). *Constructability, Sustainability and Technical Panel: How Were These Barriers Overcome?* Presented at the Eno Center for Transportation forum, Chicago, IL.

³⁶ Drouet, C.

³⁷ Gellman, A. (October 27, 2011). *What Lessons Can Be Drawn For Airports and Large Transportation Projects?* Presented at the Eno Center for Transportation forum, Chicago, IL.

³⁸ Chilton, J.

³⁹ Crown, L.

⁴⁰ Naja, K.

⁴¹ Naja, K.

tional cost.⁴⁰ Important sustainability projects included:

- Wetlands relocation and mitigation
- Earthwork transport reduction
- Green roofs on new airport buildings
- LEED certified FAA control tower⁴¹

Much of the sustainability included minimizing the amount of waste produced and moved during construction. The OMP limited the amount of soil material moved in and out of the project site and designed new buildings to include green features. This ultimately saved money and allowed contractors to find innovative solutions to the sustainability requirements, underscoring the City of Chicago and the OMP's commitment to being good, responsible neighbors to the surrounding communities and their residents.

According to Khaled Naja, Chief Operating Officer of the Chicago Department of Aviation, the sustainability aspect of the program was important to its success, and implementation required the leadership of Commissioner Andolino.⁴¹ Without her leadership and coordination, the sustainability elements of the OMP would likely have not been imple-

mented and the savings would not have been realized. When asked about the motivation for the establishment of this element, Naja responded that Commissioner Andolino saw the value and cost savings in the endeavor.⁴² The sustainability aspect of the program has been a definitive success and other infrastructure projects have followed the efforts at O'Hare to conserve economic and environmental resources.

Project Delivery and Results

Another important aspect of construction was constant benchmark setting and progress monitoring. These elements were not only important for the contractors but also for the constituents who support the project. It is important to continue to remind the public why the project is important and to convince them that it is delivering the promised results. This maintains trust and allows for the continued support that is needed. According to Naja, "Transparency helped manage expectations."⁴³ Construction planning and implementation have been essential parts of maintaining the schedule and budget. Strong leadership, maintained trust, and alternative approaches have helped the OMP maintain its budget and schedule.



The O'Hare Modernization Program deeply entrenched in construction (photo courtesy of the Chicago Department of Aviation).

⁴¹ Naja, K. Eno Conference 2011

⁴² Naja, K. Eno Conference 2011

⁴³ Naja, K. Eno Conference 2011

Lessons Learned

“The future has never looked so bright for the OMP, City of Chicago, and the [Chicago] Department of Aviation.”

Rosemarie S. Andolino

Commissioner, Chicago Department of Aviation

The multi-billion dollar O’Hare Modernization Program has managed to overcome the obstacles that routinely plague large infrastructure projects, including maintaining a schedule, budget, and political support. The experiences and aspects of the program mentioned above lead to many lessons that can be learned from the OMP. In an era of widespread distrust for large infrastructure projects, these lessons can be applied to other projects in the future projects to emulate the success of O’Hare.

Building a Deep-Rooted Consensus is Vital to Moving Forward

Convincing the public of the need for a mega-project is



Professor Aaron Gellman

essential to starting planning process. To build support, the business leaders of Chicago took the lead. “It took the private sector to really spark the program.”⁴⁵ With the help of the Commercial Club of Chicago, they studied and demonstrated the economic impacts of O’Hare’s congestion, it’s importance in the regional economy,

and the possible consequences of inaction. Leadership from major stakeholders, such as business leaders in the case

of the OMP, was important to voicing the importance of the project. Political officials often cannot risk taking a stance on a controversial issue until there is a trend toward broad support. The Commercial Club of Chicago was in the position to take leadership, building support, and make it easy for the Mayor and other elected state officials to support the project.

During the conference, many of the panelists remarked on the importance of the activism on the part of the Chicago business community, highlighting the “high expectations of corporate executives whether they are home grown here or new to Chicago. The expectation... is you are going to get involved.”⁴⁶

Because large infrastructure projects take several years to complete, it is important that the support is not only broad, but also deeply rooted, to make sure that the support will continue for the duration of the project. This deep-rooted support is not limited to those that would traditionally support the project. It is also important to remember that it is possible and necessary to change the opinions of the opposition. While not everyone will be completely satisfied, compromise on key issues and increasing the overall number of benefits by modifying the plan will help garner support and ensure that costly litigation does not hold up key projects. As an example, the Western Access aspect of the OMP was essential in proving to the suburban communities that they were going to benefit from the expansion.

Winning over opposition is an issue that takes a skilled leader who is willing to openly discuss the issues at hand. As Bensenville Mayor Frank Soto said, “You can’t go in there like a bull and expect it just to happen because you are bigger, stronger and more entrenched than the other group.” Treating all parties with respect can go a long way in finding common ground and finding equitable solutions that can move the project forward.

⁴⁵ Gellman, A.

⁴⁶ Barrett, M.



Runway construction at Chicago O'Hare International Airport (photo courtesy of the Chicago Department of Aviation).

For other infrastructure projects aiming to emulate the OMP, this is a necessary lesson to replicate. Project proponents need to think strategically on how the proposal can be reworked to include more stakeholders and effectively “increase the size of the pie.” Communication between parties, even if their viewpoints disagree, is essential to building trust and eventually finding common ground to solve the problem.

Maintaining Support Through Transparency, Accountability and Intermediate Deadlines

The OMP took specific steps to ensure that the public support and trust was maintained for the duration of construction. The program set intermediate deadlines for certain projects and phases, which allowed for key stakeholders to measure progress and monitor the budget, as well as derive incremental benefits. With these smaller projects completed on time and under budget, the trust established in the beginning was maintained and support for more construction spending preserved. The intermediate deadlines required the program to be transparent and open to the public, stakeholders, and elected officials.

This is an aspect of large infrastructure projects that is not

often replicated. Intermediate deadlines that demonstrate real progress and incremental benefits are important in proving to support that the project is well managed and worthwhile. Losing support midway through a project can be devastating to the timeline and can result in costly delays in work. In many cases a loss of support can result in key aspects of mega-projects not being completed. Setting intermediate deadlines and benchmarks can be a way to hold project managers accountable. Maintaining those deadlines is very important to a project's future, providing operational benefits along the way and reassuring stakeholders of the return on their investment.

Convincing the Federal Government that the Problem is of National Significance

The congestion problems at O'Hare were affecting not only Chicago but the national and international aviation systems. The OMP did a thorough job of communicating this to federal officials to help secure federal discretionary money and to facilitate the regulatory process. The City of Chicago benefited from this attention by receiving a dedicated, local FAA office and nearly \$1 billion in federal discretionary dollars. Although mostly out of the control of the program, it did prove helpful at times that former Illinois Senator Barack

Obama was elected President in 2008. Not all mega-projects have the national and international impact that the OMP does. However under different approaches many projects can be shown to have significant national impacts and thus to gain the recognition and support needed from national officials.

Being Proactive on Completing All Regulatory Filings

The OMP was proactive in filing environmental and other necessary federal permits. They hired well-trained professionals and ensured that they were proactive in finding and resolving any issue that may have needed to be mitigated. They understood the regulatory process and safeguarded against any possible surprises that may have arisen in the planning process. This did not necessarily speed up the regulatory process, but it certainly made it very smooth and thus did not lengthen the costly time it took to get necessary permits.

The principal lesson shows that mega-projects require extra resources to ensure that qualified planners and leaders are preparing comprehensive documents. As demonstrated in Chicago, the payoff in terms of expediting the permitting process and avoiding delay is often worthwhile.

Long-Term and Strong Leadership Helps Keep a Consistent Plan

While there may be a great need and public backing for a project, large infrastructure expansions need to have solid leadership in charge of government and stakeholder groups. The success in Chicago would not have been possible without powerful boosters such as Mayor Daley and now Mayor Emanuel. Expensive projects can be risky for elected officials and taxpayers; having leaders who are willing to maintain support and ensure that the project moves forward is essential to both getting the project started and ensuring that it continues during construction. “Programs like this need really good leadership and management. Chicago has been exceedingly fortunate in having that.”⁴⁷

Not only does the leadership need to be strong but it also needs to be sustained. A change in a political administration can delay any project, as new elected officials are not interested in continuing old projects; they would prefer to instigate new projects under their name. Chicago had the



Chicago O’Hare maintains full operations during the OMP.

benefit of long serving elected officials who maintained the support for the program. Former Mayor Daley was in office for 22 years; former DuPage County Chairman Schillerstrom was in office for 12 years; and Commissioner Andolino has served throughout the period of the OMP.

This is one of the more challenging lessons to take to other infrastructure projects as it involves an amount of luck in a democratic political structure. It is hard to guarantee that an elected official, such as Mayor Daley, will have strong leadership skills and also maintain his leadership position for more than 20 years. Many projects, both large and small, are cancelled when a new official is elected. However, for large projects the support and handling of the progress becomes a cornerstone election issue and managing a project well throughout the region can help re-election efforts.

Financing Scheme that is Politically Feasible and Stable

The basic funding for the OMP came from passenger facility charges and general airport revenue bonds, which are typical for airport expansion projects. Other funding came from federal grant money that was awarded to the project at various points during its development.

There were two ways in which the financing of the OMP was viewed as a success. First the OMP was very successful in receiving federal discretionary money because the project backers made a strong case that the program was of national

⁴⁷ Gellman, A.

significance and had national benefits. Nearly \$1 billion of the overall funding came from the federal government and this helped to convince the public that it was worth doing. Secondly the OMP ensured that the project maintained a budget and schedule, which was essential to proving to the stakeholders that it was worth raising additional funds to complete construction.

Depending on the infrastructure project, replicating O'Hare's success could be difficult. Airport expansion projects, which primarily rely on user fees and airport bonds, gain public support easier than other large infrastructure projects that use local tax revenues. However, any infrastructure project must recognize the important connection between maintaining a budget and schedule and the public's acceptance of additional revenues to continue the project. This aspect is vital to the success of the project to both build support and maintain adequate funding for the project over the entire construction period.

Comprehensive and Forward Thinking Planning

To accomplish safe construction of a program at a busy airport required detailed planning and careful execution of that plan. The plan must account be comprehensive yet flexible enough to adapt to unforeseen problems. Not only was the plan well-conceived, but it also included aspects of sustainability that in the end reduced environmental impacts while significantly reducing costs. With O'Hare as an example, it is worthwhile to build a comprehensive plan that is flexible enough to adapt to changes yet thorough enough to anticipate potential problems.

Along with Chicago there are many examples of large infrastructure projects that have used innovating thinking to achieve better results. Planners should take time to learn from these approaches to try and incorporate them into their own projects.

Conclusions

Recent experience with large infrastructure projects involves frustrating delays, mismanaged contractors, sub-par construction, and infuriating cost over-runs. The O'Hare Mod-



Eno President and CEO Joshua Schank meets with Chicago Mayor Rahm Emanuel, Chicago Department of Aviation Commissioner Rosemarie Andolino and Michael R. Zalewski, Chairman of the Committee on Aviation for the Chicago City Council

ernization Program breaks that mold as a project that has overcome local controversy, maintained a rigid schedule, and managed completion to date under budget. The OMP shows how proper planning and management of major infrastructure can be done and there are ways in which to replicate this success in other parts of the United States. Key aspects to the OMP's success include:

- Building and maintaining support and trust with key stakeholders
- Strong and long-term leadership throughout the process
- Planning and construction methods that are comprehensive yet flexible
- Strong management over the budget and schedule

At the Eno Center for Transportation Conference in October 2011, Chicago Mayor Emanuel was present to recount the importance of investment in infrastructure. According to the Mayor, the most important aspects of the project were "...taking O'Hare modernization out of politics, realizing how important it was as an economic engine for the entire region... and investing in our future, because when we invest in O'Hare our future is brighter."

Paper

Paul Lewis

Policy and Strategic Finance Analyst
Eno Center for Transportation

Joshua Schank

President and CEO
Eno Center for Transportation

Pamela Shepherd

Senior Director of Communications
Eno Center for Transportation

Emil Frankel

Senior Fellow
Eno Center for Transportation

Event

Barbara Gannon

Executive Vice President
Eno Center for Transportation

Melissa Paradis

Program Coordinator
Eno Center for Transportation

Erin Mackey

Chief of Staff
Chicago Department of Aviation

Danielle S. Sliozis

Assistant to the Commissioner
Chicago Department of Aviation

Tammy Chase

Deputy Commissioner, Communications
Chicago Department of Aviation

Gregg Cunningham

Media Relations Coordinator
Chicago Department of Aviation

Neal Moritz

Senior Graphic Designer
Chicago Department of Aviation

Cathy Kwiatkowski

Coordinator of Special Projects
Chicago Department of Aviation

About Eno

The Eno Center for Transportation is a neutral, non-partisan think-tank that promotes policy innovation and leads professional development in the transportation industry. As part of its mission, Eno seeks continuous improvement in transportation and its public and private leadership in order to increase the system's mobility, safety and sustainability.

The leader in its field for nearly a century, Eno provides government and industry leaders with timely research and a neutral voice on policy issues. Eno's Center for Transportation Policy (CTP) publishes rigorous, objective analyses on the problems facing transportation and provides ideas for and a clear path toward possible solutions. CTP also publishes a monthly transportation newsletter that reaches 2,000 individuals directly plus another 40,000 through the Transportation Research Board. CTP's policy forums bring together industry leaders to discuss pressing issues and hear from top researchers in the field.

Through its professional development programs, the Center for Transportation Leadership (CTL), Eno cultivates creative and visionary leadership by giving public and private transportation leaders the tools and training the need to succeed together. CTL's leadership Development Conference brings the nation's top transportation students to Washington, DC, each year to meet with top practitioners in the field, while other CTL programs give transportation executives the tools they need to be successful as leaders. Since its inception, CTL has instructed over 3,000 transportation professionals.

Eno was founded in 1921 by Williams Phelps Eno (1859 - 1945), who pioneered the field of traffic management in the United States and Europe. Mr. Eno sought to promote safe mobility by ensuring that traffic control became an accepted role of government and traffic engineering a recognized professional discipline. His "Rules of the Road", adopted by the City of New York in 1909, became the world's first city traffic plan. He also wrote the first-ever manual of police traffic regulations. In 1921 he chartered and endowed the Eno Center for Transportation to attract the thinking of other transportation experts and specialists, and to provide a forum for unbiased discussions that would lead to improvements in the movement of people and goods.

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