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October 14, 2011

Cynthia Brown, Chief
Section of Administration
Office of Proceedings
Surface Transportation Board
395 E Street, S.W.
Washington, D.C. 20423

235110

Re: Finance Docket No. 35087, Canadian National Railway Company and Grand Trunk Corporation – Control – EJ&E West Company

Dear Ms. Brown:

Enclosed herewith for filing are the Original and ten (10) copies of the "Motion Seeking Partial Waiver of Service; Creation of Sub-Docket; and Notice of Substitution of Counsel," as well as a "Petition Seeking Imposition of Additional Mitigation Pursuant to the Board's Oversight Jurisdiction and Reopening Pursuant to Governing Regulations." The foregoing are filed on behalf of the Village of Barrington, IL.

Also enclosed is one copy of the foregoing documents. Please file-stamp and return to me. If you have any questions, please give me a call at 202-363-2011.

Very truly yours,

Richard H. Streeter
Counsel for the
Village of Barrington, IL

RHS:rs
Enclosures

Before the

SURFACE TRANSPORTATION BOARD

Finance Docket No. 35087

CANADIAN NATIONAL RAILWAY COMPANY AND GRAND TRUNK CORPORATION – CONTROL – E J & E WEST COMPANY

MOTION SEEKING PARTIAL WAIVER OF SERVICE;
CREATION OF SUB-DOCKET;
AND NOTICE OF SUBSTITUTION OF COUNSEL

Comes now, the Village of Barrington, IL ("Barrington"), by and through its undersigned counsel, and files this Motion Seeking Partial Waiver of Service and creation of sub-docket. On this date, Barrington has simultaneously filed its *Petition Seeking Imposition Of Additional Mitigation Pursuant To The Board's Oversight Jurisdiction And Reopening Pursuant To Governing Regulations* ("*Petition*"). As reflected by the Certificate of Service, copies of the *Petition* have been hand-delivered on Paul Cunningham, counsel of record for the Canadian National Railway Company and Grand Trunk Corporation ("CN").

In seeking a partial waiver of service, Barrington notes that the initial service list, which was compiled during the course of the acquisition proceeding, is now obsolete and would require service on several hundred individuals who have no continuing interest in this proceeding, especially when the relief sought on reopening applies only to Barrington. Simply stated, the cost of reproducing hard copies of lengthy documents as well as postage for a

service list of 1132 persons would impose a wasteful financial burden on Barrington, CN and any other person who may choose to file responses or other documents in the future, especially when most parties on the service list have no real, continuing interest in the proceeding.

Those parties whose interests have been addressed by the Board's decisions approving CN's acquisition of EJ&E, or are located in communities that have already reached settlement agreements with CN, will have no interest in the relief being requested by Barrington. In any event, parties that may have a passing interest will be able to access the Barrington *Petition* electronically from either the Board's website or from the closely-followed website that has been established by the TRAC coalition to monitor the Transaction both pre-acquisition as well as during this oversight period.

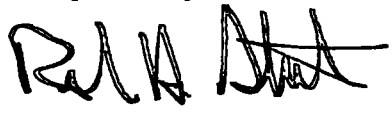
Barrington submits that service of this Motion will satisfy the notice requirements and will alert those persons who may have a continued interest to the *Petition* and provide them with the opportunity to request service of a hard copy of the *Petition*. Barrington hereby agrees to serve a hard copy of the *Petition* on any person who requests service thereof. Should the Board agree with this approach, it should order that requests for hard copies of the *Petition* be directed to Ms. Melanie Marcordes at mmarcordes@barrington-il.gov or by mail at 200 S. Hough Street, Barrington, IL 60010. Upon receipt of such requests, Barrington will forward them to the Board so that the Board can compile a current service list to replace the obsolete version of that list.

Should the Board deny this request, Barrington will serve true copies on all parties. In order to facilitate the production of copies, Barrington requests leave to serve all parties within five (5) business days of service of the Board's decision.

Barrington respectfully suggests that it may be most efficient for the Board to open a new sub-docket for oversight proceedings. This would permit all persons who may be interested with the opportunity to intervene as parties of record in that new proceeding.

Last, please modify the Board's records to reflect the entry of Richard H. Streeter, Law Office of Richard H. Streeter, 5255 Partridge Lane, N.W., Washington, D.C. 20016, as sole Counsel of Record for Barrington. Counsel's telephone number is 202-363-2011. Fax number is 202-363-4899. If you have any questions, please contact the undersigned.

Respectfully submitted,



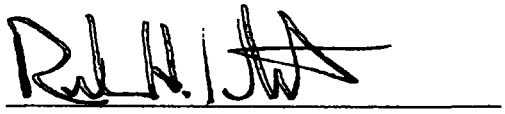
Richard H. Streeter
Counsel for the Village of Barrington, IL

Dated: October 14, 2011

CERTIFICATE OF SERVICE

I, Richard H. Streeter, do hereby certify that on this the 14th of October, 2001, I served, by hand delivery, a true copy of the "Motion Seeking Partial Waiver of Service; Creation of Sub-Docket; and Notice of Substitution of Counsel," as well as a copy of "Petition Seeking Imposition of Additional Mitigation Pursuant to the Board's Oversight Jurisdiction and Reopening Pursuant to Governing Regulations" and Attachments thereto, on the following individuals:

Paul A. Cunningham, Esq.
David A. Hisrsh, Esq.
Simon A. Steel, Esq.
Harkins Cunningham LLP
1700 K Street, N.W. Suite 400
Washington, D.C. 20006-3804



Richard H. Streeter

Before the

SURFACE TRANSPORTATION BOARD

Finance Docket No. 35087

CANADIAN NATIONAL RAILWAY COMPANY AND GRAND TRUNK CORPORATION – CONTROL – E J & E WEST COMPANY

VERIFIED STATEMENT OF

ROBERT J. ANDRES, P.E., PTOE

IN SUPPORT OF

PETITION TO REOPEN PURSUANT TO THE BOARD'S GOVERNING REGULATIONS AND ITS OVERSIGHT JURISDICTION

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1. My name is Robert J. Andres. I am a Principal Engineer and Senior Project Manager for Civiltech Engineering, Inc., which I co-founded in 1988. My business address is 450 E. Devon Ave., Suite 300, Itasca, IL 60143. I am a registered Professional Engineer ("P.E.") in the State of Illinois, as well as a certified Professional Traffic Operations Engineer ("PTOE"), which is a national traffic engineering certification.

2. I have a B.S. Civil Engineering (1972) and a M.S. Highway Engineering (1974) from the University of Illinois at Urbana-Champaign. I have been employed in private consulting engineering since 1974. Prior to co-founding Civiltech, I served for 11 years as Project Engineer, Project Manager, and Phase I Services Department Head for Midwest Consulting Engineers, Inc. Before

that, I worked four years as a Project Engineer for Metcalf & Eddy, Inc. I have completed more than 50 environmental assessment and combined design reports for projects ranging in complexity from simple intersection channelization projects to major urban arterial improvements. In addition to Phase I engineering studies, I specialize in feasibility studies, traffic engineering and traffic signal and signal system design.

3. Civiltech has extensive experience working with the VISSIM traffic simulation program. VISSIM is a powerful microscopic time step and behavior-based simulation program developed to model urban traffic and rail operations. The program models individual driver behaviors and the resulting vehicle interactions to realistically simulate the performance of actual traffic flows. Traffic and rail operations are modeled under actual constraints such as roadway and railway configurations, speed limits, traffic composition, vehicle characteristics, traffic signals, transit stops, train blockages, and driver behaviors, among others.

4. In May 2011, Civiltech was commissioned to prepare an update of a previous traffic impact study ("Barrington TIS") that the Village of Barrington commissioned in 2007 to evaluate the impacts of the proposed Canadian National (CN) Railway acquisition of the Elgin, Joliet & Eastern (EJ&E) Railway Company ("Acquisition"). The previous study compared existing conditions in 2007 to predicted 2015 vehicular traffic and 2015 post-Acquisition rail traffic in order to determine the effects of the Acquisition on traffic mobility and congestion in the Village. The current Traffic Impact Study Update ("TIS

Update"), which was finalized in September 2011, builds on the previous study's computer models and updates them based upon actual CN train operational data that was collected within the Village in 2011. This study also reviews the methodology employed by HDR in its *Village of Barrington Traffic Operational Analysis* ("VOBTOA"), which was relied upon by the STB's Section of Environmental Analysis ("SEA") in preparing the Final Environmental Impact Statement ("FEIS") for the Acquisition. The VOBTOA was prepared by HDR, Inc. ("HDR"), the STB's engineering consulting firm that assisted in the preparation of the environmental analysis and public documents.

5. As explained in the TIS Update, which I am sponsoring and which is attached hereto, it has five primary objectives. In addition to reviewing and analyzing HDR's methodology, Civiltech was asked to calculate the 24-hour delay impacts of the Acquisition at IL Route 59 and U.S. Route 14 in Barrington using the VISSIM computer modeling software program and to update the VISSIM analyses developed for the original Barrington TIS to reflect the characteristics of actual CN Railway train operations within the Village that Civiltech measured in May and June of 2011. Civiltech was also asked to determine the traffic operational benefits of constructing a grade separation at the intersection of U.S. Route 14 and the EJ&E line. In addition, Civiltech was asked to use the same VISSIM measurement tool to calculate the 24-hour delay impacts of the Acquisition at U.S. Route 34 in the City of Aurora and compare the delay values to those calculated in Barrington. The U.S. Route 34 crossing in Aurora was one of the two crossings for which the STB ordered CN

to pay a substantial portion of the cost of constructing the needed grade separations.

6. The technical studies and VISSIM modeling for the TIS Update were prepared by Civiltech staff under my direct supervision. I authored the report based on the findings of the technical studies.

7. Based on Civiltech's VISSIM analysis and the results stated in the TIS Update, it is my professional opinion that there are several significant material errors and omissions that led to incorrect or unsupported conclusions in the FEIS, served December 5, 2008, and in Decision No. 16, served December 24, 2008. Furthermore, HDR's methodology failed to accurately measure traffic delay impacts in Barrington. As the TIS Update demonstrates, application of the same criteria to U.S. Route 14 in Barrington as were applied to U.S. Route 34 in Aurora demonstrates that the impact of the Acquisition on U.S. Route 14 is as severe as the impact on U.S. Route 34.

8. By utilizing VISSIM in the VOBTOA, HDR purported to use a more sophisticated and accurate analysis tool to evaluate the unique traffic conditions in Barrington. However, HDR misapplied that tool, as highlighted below, in a way that led to the incorrect or unsupported conclusions in the FEIS.

9. HDR used VISSIM to only analyze A.M. and P.M. peak hours, which are unrepresentative times to measure CN train delays because they are times of voluntary CN train curfews. Limiting the analysis to two separate peak hours of the day also stripped the ability of VISSIM to measure the cumulative delay

impacts of multiple train events on the two rail lines. HDR's focus solely on A.M. and P.M. peak hours, rather than on a 24-hour period, vastly understated the total delay time attributed to CN's increased freight rail service and did not capture the compounding effect of twenty trains over an entire 24-hour period. This is because HDR's peak hour analysis quantified the effect of only two additional trains per day rather than 15 additional trains. In addition, HDR's VISSIM simulation actually shows that the queue created by a single train event in the P.M. peak hour failed to dissipate 20 minutes after the train passed, at which time the simulation was stopped.

10. Civiltech's TIS Update also revealed that HDR compounded its analysis error by averaging vehicle delays over all 5.8 miles of Village streets contained in the HDR VISSIM model. HDR's model contains streets that are well beyond the areas affected by train delays. By including roadway segments that are far removed from the EJ&E crossings, HDR further diluted the impact of additional CN freight traffic in the Village.

11. By limiting the hours over which delays were measured and averaging them over a large area of the street network, HDR understated the impact on local transportation systems of the greatly increased number of freight trains running through Barrington. Without a sophisticated understanding of the VISSIM program, readers of the VOBTOA who are not familiar with the VISSIM process would likely fail to appreciate that the program was narrowly applied and the results were reported in a misleading manner. Thus, without that specialized knowledge, most readers would erroneously conclude that the

VOBTOA proved that there would be little impact from additional freight train traffic in Barrington (i.e. only a 4% to 5% increase) and that the VOBTOA validated the rudimentary analysis procedure used in the FEIS.

12. Given the STB's criterion for "substantial effect" of an increase caused by the Proposed Action of 40 or more hours of total vehicle delay measured over a 24-hour period, there is no rational basis for ignoring 22 hours of the day in order to focus only on the A.M. and P.M. peak hours when performing a traffic study to determine the delay caused by increased rail traffic. In order to present an accurate assessment of the Acquisition's impact, HDR should have focused on the impact of CN's increased traffic over a 24-hour period, which reflects CN's actual operations.

13. Based on my review of HDR's analysis and the documents that appear in the FEIS, I cannot find any indication that HDR ever acknowledged the dramatic discrepancy in conclusions reached between the 2007 Barrington TIS and their VOBTOA, or that they even drew the Board's attention to the fact that the 2007 Barrington TIS analyzed a complete 24-hour period, whereas their study analyzed only two peak hours. Since both studies utilized VISSIM to measure train delays, it is easy for a non-technical reader to get the wrongful impression that each study measured the same thing, when indeed they did not.

14. Nor does it appear that HDR advised the Board that its own data table (Table A.5-1 of the FEIS) incorrectly calculated 24-hour **Total Vehicle Traffic Delay Percent Increases** for all EJ&E crossings, which made the increases in

delay appear to be much smaller than they actually were. While most people would expect the term "percent increase" to mean the change in value of a term divided by the **initial** value of that term, HDR calculated percent increase as the change in value of the term divided by the **final** value of that term. Thus, for example at U.S. Route 34 (Ogden Avenue), Table A.5-1 of the FEIS reports a No-Action 24-hour total vehicle traffic delay of 1,132.8 minutes (initial value), a Proposed Action total delay of 4,377.0 minutes (final value), an increase in total delay of 3,244.2 minutes (change in value = 4,377.0 – 1,132.8), but a percent increase in total delay of 74% (i.e. 3,244.2 ÷ 4,377.0); when in fact the percent increase should have been 286% (i.e. 3,244.2 ÷ 1,132.8). **Thus, all of the Percent Increase values in Table A.5-1 of the FEIS are incorrect.** When the percentage increase calculations are correctly performed, the increase in delay at the U.S. Route 14 crossing from 149.4 minutes in the No-Action scenario to 1,757.8 minutes Proposed Action scenario (as reflected in Table A.5-1) constitutes an increase of ***1,177%***, as compared to an actual 286% increase at U.S. Route 34 (Ogden Avenue) and a 668% increase for U.S. Route 30 (Lincoln Highway), the two locations for which grade separations were ordered. HDR also failed to advise SEA and the Board that HDR's predicted peak period queue length increases of 1,550 feet at IL Route 59 and 2,100 feet at U.S. Route 14 would result in increases in traffic back-ups of between ¼ and ½ mile – a reality that would have demonstrated both the substantial effect of CN freight trains on vehicular mobility through Barrington and the misleading nature of HDR's peak period analysis.

15. Civiltech's 2011 VISSIM study, which is based on actual CN post-Acquisition operations in May and June of 2011 over the EJ&E, reveals the following:

- Using the high-level VISSIM traffic simulation model instead of SEA's rudimentary analysis procedure, the study found that both the IL Route 59 and the U.S. Route 14 crossings would be "substantially affected" by the Proposed Action according to STB criteria. Depending upon which future train scenario is utilized:
    - IL Route 59 would experience an increase in total 24-hour rail crossing delay of between 64 and 68 vehicle-hours as a result of the Acquisition. This is more than 50% greater than the STB substantial effect criterion.
    - U.S. Route 14 would experience an increase in total 24-hour rail crossing delay of between 116 and 122 vehicle-hours as a result of the Acquisition. This is 2 ½ to 3 times the STB substantial effect criterion.
- The VISSIM modeling in Barrington predicted a substantial benefit to the Village roadway network as a result of grade separating the U.S. Route 14 crossing. That grade separation would reduce 2015 total 24-hour vehicle delays on both IL Route 59 and U.S. Route 14 to nearly the levels expected under the No-Acquisition scenario.

16. Civiltech's 2011 VISSIM study of U.S. Route 34 in Aurora conclusively demonstrates that the impacts at the U.S. Route 14 crossing in Barrington are

equivalent to those that caused SEA to recommend grade separation mitigation at the Ogden Avenue crossing in Aurora. Civiltech's key comparative findings are as follows:

- The VISSIM model for U.S. Route 34 in Aurora predicted an increase in total 24-hour rail crossing delay of **114** vehicle-hours as a result of CN's freight traffic. SEA characterized the level of delay at this crossing as "excessive" (Final EIS page 4-16). Due in part to the magnitude of the delay increase, SEA recommended construction of a rail/highway grade separation at the U.S. Route 34 crossing.
- By comparison, the VISSIM model for U.S. Route 14 in Barrington predicted an increase in total 24-hour rail crossing delay of between **116** and **122** vehicle-hours as a result of CN's freight traffic.
- The magnitude of the delay increase at the U.S. Route 14 crossing is similar to the delay increase at U.S. Route 34, despite the fact that the Aurora crossing is projected to carry twice as many trains and 50% more roadway traffic than the U.S. Route 14 crossing. This result is due to the unique complexity of Barrington's street system and the delays caused by interactions with the crossing UP rail line that are not shared with other communities along the former EJ&E line.
- The U.S. Route 34 crossing in Aurora was cited by SEA in its recommendation to grade separate it as a heavily traveled SRA route that did not have any nearby available alternate routes. Barrington' s U.S.

Route 14 crossing is also a heavily traveled SRA route that does not have any nearby alternate routes that could be used to avoid train delays.

17. Civiltech also observed that although the Final EIS recognized on several occasions the importance of Strategic Regional Arterial (SRA) routes to regional mobility, it never mentioned the fact that U.S. Route 14 is an SRA route. Because the SRA designation was an important factor in determining the need for a grade separation at U.S. Route 34, U.S. Route 14's designation as such should have been given equal weight.

18. The opinions I have expressed in the report are based on the data derived from the VISSIM studies, as well as on my professional engineering experience, which has been gained through 37 years of practice in the field of traffic and transportation engineering as a consulting engineering. My experience includes working for all six county highway or transportation departments in Northeast Illinois, the Illinois Department of Transportation, the Illinois State Toll Highway Authority, the City of Chicago, more than 60 municipalities and numerous private developers preparing traffic studies, feasibility studies, preliminary engineering studies, environmental assessment studies and Phase I design studies for highway and site development projects.

FURTHER SAYETH THE AFFIANT NOT.

VERIFICATION

I, Robert J. Andres, P.E., PTOE, hereby declare under penalty of perjury that the foregoing is true and correct. Executed on September 8, 2011.

Robert J. Andres

Robert J. Andres, P.E., PTOE

Before the

SURFACE TRANSPORTATION BOARD

Finance Docket No. 35087

CANADIAN NATIONAL RAILWAY COMPANY AND GRAND TRUNK CORPORATION – CONTROL – E J & E WEST COMPANY

PETITION SEEKING IMPOSITION OF ADDITIONAL MITIGATION PURSUANT TO THE BOARD'S OVERSIGHT JURISDICTION AND REOPENING PURSUANT TO GOVERNING REGULATIONS

The Village of Barrington, Illinois ("Barrington"), by and through counsel, respectfully files this Petition seeking oversight mitigation pursuant to the Board's retention of jurisdiction to impose additional conditions and take other actions to address newly developed information that demonstrates the actual impacts of the transaction. *See* Decision No. 16, December 24, 2008, at 25-6 and *Board's Final Mitigation Condition* No. 72.[1] Alternatively, reopening is warranted pursuant to 49 U.S.C. § 722(c) and 49 C.F.R. § 1115.4, which provide that a petition for reopening "must state in detail the respects in which the proceeding involves material error, new evidence, or substantially changed circumstances and must include a request that the Board make such a determination." Barrington's Petition is based on newly discovered evidence and changed circumstances, as well as material error. Therefore, it also satisfies the Board's regulations governing reopening.

[1] This Petition is governed by 49 C.F.R. § 1117.1.

The request for additional mitigation is timely as the Board retained a five-year oversight period on the transaction. As the Board has stated in the FAQ section of its transaction-specific website in explaining the five-year oversight period it imposed on this transaction (emphasis added):

> The Board established a formal 5-year oversight and monitoring period as a condition of the Board's approval of this transaction. This oversight condition is intended to provide an effective mechanism for quickly identifying and addressing any operational or environmental concerns that may arise during the 3-year implementation phase, and the 2-year period following the full implementation of the operating plan. *The Board retains jurisdiction to impose additional conditions and take other action if, and to the extent, the Board determines it is necessary to address matters related to operations or environmental mitigation.*

The Board's decision to institute this oversight period and retain jurisdiction to impose additional conditions was subsequently validated by the ensuing actions of Canadian National Railway ("CN") when it failed to meet a mitigation obligation as spelled out in the Board's approval Decision. As a result of CN's deliberate misleading of the Board about the number of times its trains blocked crossings for periods longer than 10 minutes (per VM 36), on December 21, 2010 the Board issued Decision No. 26 extending the Board's oversight period to January 23, 2015.

The newly discovered evidence that has been developed by Barrington, while reflecting only CN's current post-Acquisition operations over the EJ&E line (which is but a fraction of anticipated future rail movements), accurately demonstrates the need for a grade separation at U.S. Route 14. It also confirms the material error that was caused by the Board's past reliance on the

misleading and truncated VISSIM analysis that HDR performed on behalf of the Board's Section of Environmental Assessment ("SEA") and which served as the basis to deny grade separation mitigation to Barrington.[2] Based on this newly developed evidence, the Board should exercise its jurisdiction to impose the additional condition that CN bear a substantial portion of the cost of constructing a U.S. Route 14 grade separation that is required solely as a result of the post-Acquisition increase in the number of trains that CN will operate over the EJ&E line through Barrington.

BACKGROUND

In Decision No. 16, served December 24, 2008, the Board approved, with mitigating conditions, CN's purchase of the EJ&E rail line that runs in an arc around the greater Chicagoland region. Because of the admitted adverse impact on communities situated along the rail line, the Board ordered 182 conditions meant to mitigate environmental harms caused by the transaction.

Included in those mitigating conditions was the mandate that CN fund a substantial percentage of the cost of constructing grade separations at Ogden Avenue (U.S. Route 34) in Aurora, Illinois and Lincoln Highway (U.S. Route 30) in Lynwood, Illinois. *See* Condition No. 14. CN timely filed for judicial review contesting only the Board's imposition of that condition. By its Decision, dated March 15, 2011, the U. S. Court of Appeals for the District of Columbia Circuit

[2] VISSIM is a German acronym for a microscopic time step and behavior-based simulation program developed to model urban traffic and rail operations. When translated, VISSIM means "traffic in towns – simulation".

specifically affirmed, over CN's explicit challenge, the Board's decision to impose the grade separation mitigation at CN's expense.

The Board, by imposing Condition No. 14, required CN to fund 67% of the cost of a grade separation at Ogden Avenue (U.S. Route 34) in Aurora and 78.5% of the cost of a grade separation at Lincoln Highway (U.S. Route 30) in Lynwood. The Board based this grade separation mitigation decision and accompanying funding allocation on the fact that both crossings met its threshold for being designated as "substantially affected." In particular, both had the highest or among the highest average daily traffic (ADT) volumes of any impacted crossing on the EJ&E, as well as a 940 foot vehicle queue back-up at Lincoln Highway that would block another major intersection. *See,* Decision No. 16 at 45. The Board explained, "[t]his transaction would have a substantial adverse effect on vehicular traffic delays and, in some areas, regional and local mobility and safety at grade crossings. Thus, applicants' share of the cost should be more than the traditional railroad share for grade-separation projects." [Decision No. 16 at 46.]

In contrast to the mitigation ordered in Aurora and Lynwood, the Board declined to require CN to fund a share of the cost of constructing any grade separations in the Village of Barrington, Illinois ("Barrington"). Instead, CN was ordered by the Board to install traffic advisory signs at the Hough Street (IL Route 59) and Northwest Highway (U.S. Route 14) intersections in Barrington. As the Board instructed CN, "[t]hese signs shall clearly advise motorists not to block intersections, and the format and lettering of these signs

shall comply with FHWA's *Manual on Uniform Traffic Control Devices."* [Decision No. 16 at 76.]

In reaching the conclusion to order signage rather than one or more grade separations in Barrington, the Board openly relied on a traffic study conducted by HDR, which was hired to act as a consultant to SEA. HDR's study was first discussed in the Final Environmental Impact Statement ("FEIS") that had been issued on December 5, 2008, only a few business days prior to the issuance of the approval decision.[3] As the Board explained, "[i]n response to numerous comments about congestion in the Barrington area, SEA [actually HDR] prepared a traffic model to help it evaluate potential mitigation strategies. The results of the analysis showed that, under the transaction, the Barrington area total delay time would increase by 4% and 5% during the AM and PM peak periods." [Decision No. 16 at 45, n101.] The foregoing statement, which is predicated on HDR's misleading and truncated VISSIM analysis, is unsupportable and constitutes material error that is confirmed by a 2011 VISSIM analysis entitled *Village of Barrington CN Railway Traffic Impact Study Update* (hereinafter "2011 VISSIM study or analysis") that Barrington commissioned following the release of the Court's decision.

As the 2011 VISSIM analysis demonstrates, CN's substantially increased rail service through Barrington is already having a regional impact on vehicular traffic that is not limited to the Village of Barrington. Because the greater Barrington area has developed with Barrington (incorporated in 1865) serving

[3] See FEIS, Appendix A, A.5 Village of Barrington Traffic Operations Analysis.

as the central hub community for the Villages of Lake Barrington, North Barrington, South Barrington, Deer Park, Barrington Hills, Tower Lakes as well as Cuba and Barrington Townships, local commuter traffic gridlock is only a small part of the problem.[4] The Board must recognize – however belatedly – that U.S. Route 14 is a vital pass-through for commuter traffic that originates in bedroom communities in the northwest area of the greater Chicagoland region and ends at places of employment in downtown Chicago and its near suburbs.

As early as April 1993, the Illinois Department of Transportation (IDOT) developed a Strategic Regional Arterial ("SRA") improvement plan that laid out recommended upgrades to U.S. Route 14 that would maximize its effectiveness as an SRA route.[5] Since that time, State of Illinois capital investments have been made to implement portions of the plan. U.S. Route 14 is a primary SRA serving the northwest portion of the greater Chicagoland region from Cook County up to the Wisconsin border. Its capacity to serve as a high volume traffic route must be maintained to ensure the current and future economic competitiveness of the communities that grew based on its effectiveness as a transportation corridor.

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[4]When it comes to the greater Chicagoland metropolitan region, most of the region's recent population and jobs growth has been – and is expected to continue to be – in the collar counties to the west of the EJ&E rail line. According to 2010 Census data, significant population growth has occurred in the two counties that rely upon U.S. Route 14 as a transit corridor (McHenry County at + 18.7% and Lake County at + 9.2%). By contrast, Cook County (where numerous railroad grade separations already exist and from where CN's rail traffic is being diverted) was the only county in the region to decline in population (- 3.4%) in 2010.

[5] *See* Map 211 at http://www.cmap.illinois.gov/template.aspx?id=17205.

Without question, the traffic impacts being created by CN's vastly increased operations on the EJ&E are a major negative factor in terms of regional commuter efficiencies, public safety, environmental sustainability, economic viability and livability of the northwest region of the greater Chicagoland metro area. However, despite being considered an SRA by IDOT that is intended to carry high volumes of long-distance traffic in conjunction with the other SRA routes and the regional expressway and transit systems, ***U.S. Route 14 is the only U.S. highway crossing the CN/EJ&E rail line that would lack a grade separation once the acquisition's currently ordered mitigation conditions are completed.***

Furthermore, U.S. Route 14 is but one of four roadways that the EJ&E rail line crosses at grade in a span of 5,918 feet within Barrington's village limits. However, Barrington has no grade separations whatsoever from the EJ&E. In addition, the closest grade-separated crossings are at Route 62 in Barrington Hills – 4 to 5 miles from Main Street/Lake Cook Road, and at U.S. Route 12 in Lake Zurich – 4 to 6 miles from U.S. Route 14.[6] Because the current length of a freight train run by CN can be as long as 10,000 feet-plus, a single freight train has the potential to block all four major roads as well as UP's freight and commuter operations which intersect with the EJ&E line in Barrington on a regular basis throughout a 24-hour period. In fact, there have been two instances in the past year (October 15, 2010 and July 16, 2011) when malfunctions on CN trains caused all major roads in Barrington to be blocked

[6] See Map No. 1 (Attachment A).

or backed up. The October 15, 2010 breakdown, which happened during the afternoon rush hour, had a widespread impact as vehicular traffic was stalled and UP commuter traffic was delayed for several hours throughout the region. The July 16 event blocked all roads crossing the EJ&E from 5:28 a.m. until 6:49 a.m. while CN dealt with a broken knuckler.

With a grade separation on U.S. Route 14, which serves as the main northwest-southeast arterial spoke running through Barrington and the only major roadway crossing the EJ&E through the Village that does ***not*** intersect with UP's commuter operations that are performed for METRA, a measure of transportation reliability will be restored to the region that was lost when CN acquired the EJ&E. Most importantly, a grade separation at U.S. Route 14 will enhance public safety as at least one reliable crossing (which most directly leads to Advocate Good Shepherd Hospital) would be available at all times for the emergency responders that operate throughout the local region. As the two recent blockages proved, emergency responders would have been rendered incapable of expeditiously transporting patients to the hospital due to all roads being blocked and/or backed up at one time.

In summary, a consistent pattern of commuter traffic gridlock (both vehicular and mass transit) caused by CN's expanded post-Acquisition operations at the EJ&E crossings in Barrington impacts all the outlying suburban communities, particularly those located north and northwest of Barrington, as well as the Village itself. If people cannot reliably reach work and schools in a timely manner, they are likely to avoid living in those

communities. Over time, this will have an immeasurable impact on the ongoing viability, property values, and tax bases of the towns and villages that serve as the northwest regional bedroom communities in the greater Chicagoland area.

NEWLY DISCOVERED EVIDENCE

I. Civiltech's 2011 Traffic Analysis.

Following the Court's affirmance of the Board's right to order a substantial CN cost-allocation for the two grade separations in Aurora and Lynwood, Barrington engaged Civiltech Engineering Inc. ("Civiltech") to prepare an analysis based on CN's actual operations over the EJ&E Line in order to compare what even SEA admitted to be "unique traffic issues" in Barrington (FEIS; Chapter 2 at page 48) with that in Aurora at Ogden Avenue. In addition, Civiltech was asked to conduct an in-depth review of the "AM and PM peak period" analysis that was used by HDR in preparing the FEIS.

1. *Civiltech's 2011 VISSIM Findings.*

In response to Barrington's request, Civiltech employed a VISSIM traffic simulation model, which SEA has acknowledged is "a high-level traffic simulation model" (FEIS Appendix A, page 1), and, in fact, used it to analyze the "unique traffic issues in Barrington" (FEIS Section 2.5.11, page 2-48). As Robert J. Andres, a Principal Engineer at Civiltech, has explained (V.S. Andres at ¶ 3:

> VISSIM is a powerful microscopic time step and behavior-based simulation program developed to model urban traffic and rail operations. The program models individual driver behaviors and the resulting vehicle interactions to realistically simulate the

> performance of actual traffic flows. Traffic and rail operations are modeled under actual constraints such as roadway and railway configurations, speed limits, traffic composition, vehicle characteristics, traffic signals, transit stops, train blockages, and driver behaviors, among others.

Civiltech's 2011 study measured delay over a 24-hour period, which was the key criterion that SEA used to evaluate traffic impacts on all grade crossings on the EJ&E Line, other than U.S. Route 14. [*See generally,* Verified Statement of Robert J. Andres ("V.S. Andres"). Attachment B.]

Civiltech's 2011 VISSIM study, which is based on actual CN post-Acquisition operations in May and June of 2011 over the EJ&E, reveals the following:

- Using the high-level VISSIM traffic simulation model instead of HDR's rudimentary analysis procedure, Civiltech's study found that both the IL Route 59 and the U.S. Route 14 crossings will be "substantially affected" by meeting the threshold delay criteria used by SEA in the environmental review process.

- Depending upon which future train scenario is utilized, the U.S. Route 14 crossing will experience an increase in total 24-hour rail crossing delay of between **116 and 122** vehicle-hours as a result of CN's freight traffic. **This is between 2 ½ and 3 times the Board's substantial effect criterion.**

- Depending upon which future train scenario is utilized, IL Route 59 will experience an increase in total 24-hour rail crossing delay of between 64 and 68 vehicle-hours as a result of CN's freight traffic. This is more than 50% greater than the Board's substantial effect criterion.

- The VISSIM modeling in Barrington predicted a substantial benefit to the entire Village roadway network as a result of a grade separation at the U.S. Route 14 crossing. That grade separation would reduce the delays

on both IL Route 59 and U.S. Route 14 to nearly the levels expected under the No-Acquisition scenario.

2. *Civiltech's U. S. Route 34/Aurora Findings.*

In Chapter 4 – Final Recommended Conditions of the Final EIS (page 4-16), when SEA recommended that grade separation would be warranted at the U.S. Route 34 (Ogden Avenue) crossing in Aurora, it properly reasoned as follows:

> Ogden Avenue (US 34) presently carries a very high volume of traffic, reflecting its importance to mobility in the region. Indeed, as noted by CMAP, US 34 is a Strategic Regional Arterial (CMAP 2008). This designation confirms the importance of US 34 to the region's mobility. Moreover, alternate routes are not readily available in the vicinity of the highway/rail at-grade crossing. US 34 also meets the total vehicle delay and exposure criteria used in SEA's analysis of the Proposed Action. Because of these transportation and safety factors, as well as the high vehicle volume on the roadway, the excessive amount of delay, the importance of the roadway, and the lack of viable alternate routes, SEA has concluded that grade separation would be warranted and appropriate mitigation for this roadway.

As noted earlier, Civiltech conducted a similar VISSIM analysis for the U.S. Route 34 crossing of the EJ&E in the City of Aurora in order to compare impacts of CN's freight traffic to that in Barrington using the same analysis tool modified to model the real-world traffic conditions in Aurora. Civiltech's 2011 VISSIM study of U.S. Route 34 in Aurora conclusively demonstrates that the impacts at the U.S. Route 14 crossing in Barrington are equivalent to those

that caused SEA to recommend grade separation mitigation at the Ogden Avenue crossing in Aurora. Civiltech's key comparative findings are as follows:

- The VISSIM model for U.S. Route 34 in Aurora predicted an increase in total 24-hour rail crossing delay of **114** vehicle-hours as a result of CN's freight traffic. SEA characterized the level of delay at this crossing as "excessive" (Final EIS page 4-16). Due in part to the magnitude of the delay increase, SEA recommended construction of a rail/highway grade separation at the U.S. Route 34 crossing.

- By comparison, the VISSIM model for U.S. Route 14 in Barrington predicted an increase in total 24-hour rail crossing delay of between **116 and 122** vehicle-hours as a result of CN's freight traffic.

- The magnitude of the delay increase at the U.S. Route 14 crossing is similar to the delay increase at U.S. Route 34, despite the fact that the Aurora crossing is projected to carry twice as many trains and 50% more roadway traffic than the U.S. Route 14 crossing. Delays in Barrington are compounded by the crossing UP rail line, nearby traffic signals and the resulting slowed discharge of queued vehicles at the Village's grade-level crossings that intersect with the EJ&E.

- The U.S. Route 34 crossing in Aurora was cited by SEA in its recommendation to grade separate it as a heavily traveled SRA route that did not have any nearby available alternate routes. Barrington' s U.S. Route 14 is also a heavily traveled SRA route that does not have any nearby alternate routes that could be used to avoid train delays.

Civiltech also observed that although the Final EIS recognized on several occasions the importance of Strategic Regional Arterial (SRA) routes to regional mobility, it never mentioned the fact that U.S. Route 14 is an SRA route. Because the SRA designation was an important factor in determining the need for a grade separation at U.S. Route 34, U.S. Route 14's designation as such should have been given equal weight.

The chart shown below, which is based on Civiltech's 2011 study, compares conditions at U.S. Route 14 crossing in Barrington with those at U.S. Route 34 crossing in Aurora. It unequivocally demonstrates that impacts in Barrington stemming from the transaction are at least equivalent to the impacts in Aurora, and therefore, are deserving of the same mitigation.

Comparison of CN Railway Crossings of U.S. Route 14 in Barrington and U.S. Route 34 in Aurora

Comparison	U.S. Route 14 In Barrington	U.S. Route 34 In Aurora
SRA Route	Yes	Yes
Nearby Rail Line That Also Impacts Traffic Flow	Yes	No
Nearby SRA That Also Impacts Traffic Flow	Yes	No
Nearby Available Alternate Route	No	No
Travel Distance to Nearest Alternate Grade Separation	4-6 miles	2-3 miles
2007 Average Daily Traffic Volume	28,500 vpd	36,400 vpd
2015 Average Daily Traffic Volume	30,700 vpd[1]	46,110 vpd[2]
Existing Roadway Capacity Constraints	Yes	Yes
Meets FHWA Exposure Criterion	No[3]	Yes
Pre-Acquisition Daily Train Volumes	5 trains	16 trains
Post-Acquisition Daily Train Volumes	20 trains 300% increase	40 trains 150% increase
Designated as a Substantially Affected Crossing in FEIS	No[4]	Yes
Increase in Hours of Daily Vehicular Delay in 2015 Due to CN Freight Traffic	+116 to +122	+114

Footnotes:

[1] Civiltech's Village of Barrington forecast. FEIS forecast was 33,949 vpd. The U.S. Route 14 forecast ADT is the third highest of any of the roads that cross the EJ&E per Civiltech projections and second highest per SEA projections.

[2] FEIS forecast.

[3] Although the Lynwood crossing also fell short of that exposure factor criterion, the Board determined that it should be grade separated.

[4] The rudimentary analysis methodology first employed by HDR coupled with its inadequate VISSIM analysis and the consultant's failure to recognize U.S. Route 14 as an SRA led to U.S. Route 14 being left off the list of "substantially affected" crossings for the entire environmental review process.

3. *Civiltech's 2011 VISSIM Findings Confirm HDR's 2008 Methodological Errors.*

When HDR's methodology underlying its "Village of Barrington Traffic Operational Analysis" (VOBTOA) is subjected to close scrutiny, there is no avoiding the conclusion that it resulted in findings that are erroneous and highly misleading. In the first place, instead of focusing on a 24-hour period, HDR, ***without alerting the Board and SEA to the discrepant treatment***, applied a different criterion to analyze Barrington's grade crossings than was applied to ***every other*** similarly-situated community located on the EJ&E rail line. In particular, in its VISSIM modeling program, HDR measured delay in ***only*** AM and PM peak periods, ***a criterion that was not used to evaluate traffic impacts on any other grade crossing on the EJ&E Line.***

As Civiltech has explained (Civiltech 2011 Traffic Analysis at 6):

> HDR analyzed only A.M. and P.M. peak hour conditions on Barrington's street network rather than an entire 24-hour period as required by STB's "substantial effect" criteria. Moreover, the peak hours are times during which CN observes voluntary curfews on freight train movements due to the high levels of commuter train traffic on the UP line. Thus, during peak periods, the delay impacts of the Acquisition would be expected to be minimized, making those periods unrepresentative times upon which to base an assessment of the impact of additional trains.

Of course, when HDR decided to limit the scope of the analysis to the "peak periods," it was aware that "CN has agreed to adhere to the existing freight train curfews, which could limit the number of trains on the EJ&E rail line during the AM and PM peak periods." [FEIS, Appendix A at 73.] As

Civiltech's 2011 VISSIM study demonstrates, the inappropriate use of "peak periods" ultimately allowed HDR to claim (*id.* at 101) that "[u]nder the Proposed Action scenario, network-wide total delay time increased by four (4) percent and five (5) percent during the AM and PM peak periods, respectively, over the No Action scenario." As Civiltech's 2011 VISSIM study demonstrates, that claim is baseless.

In addition, as Civiltech has observed in its recently completed 2011 study, the HDR study that was included as Appendix A-5 in the FEIS failed to consider the entire PM period. As Civiltech has noted, "at the U.S. Route 14 crossing, the [HDR] VISSIM simulation showed that the queue created by a single train event in the P.M. peak hour failed to dissipate 20 minutes after the train passed, at which time the simulation was stopped." [*See* Civiltech 2011 Traffic Analysis at 5.] Moreover, HDR's peak hour analysis quantified the effect of only two additional trains per day rather than 15 additional trains. As such, it does not capture the compounding effect of twenty trains over an entire 24-hour period. It was only by applying this unique methodology to Barrington that HDR was able to understate the impact on local transportation systems of the greatly increased number of freight trains running through Barrington.

Civiltech further discovered that HDR compounded this analysis error by averaging vehicle delays over all 5.8 miles of Village streets contained in its VISSIM model. The model contains streets that are well beyond the areas affected by train delays. By including roadway segments that are far removed from the EJ&E crossings, HDR further diluted the impact of additional CN

freight traffic in the Village. Averaging delays over such a large area allowed HDR to claim peak period delays would increase only 4% to 5% when, in fact, the delay increases near the crossings would be much greater.

Civiltech also analyzed HDR's conclusion in the FEIS that "construction of a grade separation alone at either the Hough Street or Northwest Highway crossings is not a feasible way to address regional congestion due to capacity constraints at existing signalized intersections." Civiltech could find no evidence that HDR's conclusion was based on VISSIM analyses of grade separation scenarios that would be needed to determine the impact of a grade separation on vehicular traffic constraints. [*See* 2011 Traffic Analysis at 7]. Moreover, as noted previously, Civiltech's own analysis shows that a grade separation at U.S. Route 14 will reduce the delays at the U.S. Route 14 and IL Route 59 crossings in the Village caused by post-Acquisition operations to nearly no-Acquisition levels. Had HDR actually undertaken any analysis on this point, it would have reached the same conclusion.

Civiltech further determined that HDR's analysis failed to address the interactions and cumulative effects of the UP rail line that crosses the EJ&E line just northwest of the downtown and also crosses two of the three major arterial routes in the Village that are crossed by the EJ&E Line. As Civiltech has noted (Civiltech 2011 Traffic Analysis at page 3, n.1):

> The analysis methodology relied upon in the FEIS to calculate roadway delay impacts employed a rudimentary equation for calculating delay that assumes an idealized crossing isolated from any conditions that would influence traffic flow other than the railroad, and which has uniform traffic arrival and

> departure rates throughout the day. The methodology is not accurate in Barrington as it does not consider the effects of nearby traffic signals or signal systems, interactions with another intersecting rail line or the cumulative effects of successive train events, all of which exist at the CN Railway crossings in the Village.

As also explained at page 3 of Civiltech's report:

> Operation of nearly 70 commuter and freight trains per day on the UP line [which operates commuter trains for METRA] already has a large impact on traffic flow on the same roadways that will be impacted by the Acquisition. During many hours of the day, it will be likely that traffic flow will not have the time to recover from one train event before another train event occurs.
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> A methodology that does not account for the interactions of the two rail lines or the cumulative effect of successive train events will not adequately address the unique conditions in Barrington and will fail to calculate the full delays that will result from the Acquisition. Because the impact assessments and the Final Recommended Conditions contained in the FEIS were based on the delay calculations that did not address these interactions and cumulative effects, those findings were inaccurate.

II. HDR's Report Misled The Board In Several Respects.

In addition to the methodological errors in HDR's approach, there is nothing to indicate that HDR ever attempted to verify any of Barrington's Comments related to the DEIS that were based on Civiltech's initial VISSIM study. Apparently recognizing that Barrington's Comments had revealed flaws in HDR's initial approach, HDR purported to perform an "additional traffic analysis of the Barrington area" in order to "validate" the analysis in the Draft EIS. [FEIS at 2-48.] By definition, however, if the analysis in the DEIS was erroneous, the purposeful "validation" of the erroneous analysis is a

disingenuous approach at best. In short, instead of seeking a valid result that could assess why Barrington's traffic modeling resulted in traffic delay impacts that were vastly different from those results provided in the DEIS, HDR appears to have predetermined the result it wished to reach and then adjusted its analysis methodology to reach that predetermined result. **There is nothing to indicate that the Board was made aware of this stratagem.**

Equally important, there is nothing to indicate that HDR ever advised the Board at any time during the entire environmental review process (including during the SEA's full Board briefing on the EIS held on November 18, 2008) that its vehicular delays chart (Table A.5-1 of the FEIS) incorrectly calculated 24-hour **Total Vehicle Traffic Delay** percent increases for all EJ&E crossings, which made the increases in delay appear to be much smaller than they actually were. As Andres explains in detail (V.S. Andres at ¶ 14):

> While most people would expect the term "percent increase" to mean the change in value of a term divided by the **initial** value of that term, HDR calculated percent increase as the change in value of the term divided by the **final** value of that term. Thus, for example at U.S. Route 34 (Ogden Avenue), Table A.5-1 of the FEIS reports a No-Action 24-hour total vehicle traffic delay of 1,132.8 minutes (initial value), a Proposed Action total delay of 4,377.0 minutes (final value), an increase in total delay of 3,244.2 minutes (change in value = 4,377.0 – 1,132.8), but a percent increase in total delay of 74% (i.e. 3,244.2 ÷ 4,377.0); when in fact the percent increase should have been 286% (i.e. 3,244.2 ÷ 1,132.8). **Thus, all of the Percent Increase values in Table A.5-1 of the FEIS are incorrect.** When the percentage increase calculations are correctly performed, the increase in delay at the U.S. Route 14 crossing from 149.4 minutes in the No-Action scenario to 1,757.8 minutes Proposed Action scenario (as reflected in Table A.5-1)

> constitutes an increase of ***1,177%***, as compared to an actual 286% increase at U.S. Route 34 (Ogden Avenue) and a 668% increase for U.S. Route 30 (Lincoln Highway), the two locations for which grade separations were ordered.

As he also explains (id.):

> HDR also failed to note for SEA and the Board that HDR's predicted peak period queue length increases of 1,550 feet at IL Route 59 and 2,100 feet at U.S. Route 14 would result in increases in traffic back-ups of between ¼ and ½ mile – a reality that would have demonstrated the substantial effect of CN freight trains on vehicular mobility through Barrington.[7]

Indeed, the record* reflects that HDR *suppressed and did not direct the Board's attention to the results of Barrington's VISSIM study that served as the basis for the Village's DEIS Comments. Nor did HDR explain how and why its own responding analysis used in the FEIS reached conclusions that were clearly at odds with the Barrington analysis even though the Board would likely assume both analyses purportedly used the same software in a consistent manner. In the end, the Board was told only that "[i]n general, the results of the traffic

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[7] Given the pressure that was put on SEA and HDR by CN's demands that the FEIS be completed in record time, one cannot be surprised by the amount of confusion and analytical error that has been uncovered during an unhurried study of HDR's VOBTOA. As the record reflects, the Board--at CN's insistence--compressed the period of time between the date the DEIS was served and the date that the voluminous FEIS was served. In oral arguments before the Federal Appellate Court, STB Counsel Evelyn Kitay noted in response to a question about the comment timeline for the environmental review and the reality that the Board had not allowed parties to reply to DEIS comments (Tr. at 50), "Well, if we had done that the railroad would have screamed because it was trying so hard to get this case expedited...".

analysis confirmed the conclusions that SEA reached in the Draft EIS."

[FEIS Chapter 2 Revised Information at 48.]

The FEIS contains no explanation regarding the reasons for not utilizing the 24-hour traffic impact measurements used on all crossings other than those located in Barrington. Furthermore, because no attempt was made to discuss and identify any deficiencies in Barrington's analysis, it appears that the Board was not apprised that HDR's limited "peak period VISSIM analysis" could not be legitimately compared with Barrington's "24-hour VISSIM analysis." Nor can HDR's analysis of Barrington's crossings be properly compared with SEA's analysis of U.S. Route 34 (Aurora) and U.S. Route 30 (Lynwood), which caused SEA to recommend grade separations at those crossings based on delays similar to those projected by Civiltech's Barrington analysis. As a result, Barrington respectfully submits that the Commissioners were misled, whether deliberately or unintentionally, by HDR's inadequate VOBTOA analysis methodology.[8]

Because the Board was not made aware of the results of Barrington's analysis, or the dramatic difference in results caused by the use of only peak period figures as compared with 24-hour figures, the Board likely did not realize that it was not applying identical standards to all crossings. Barrington further submits that had the Board been properly alerted to the blatant discrepancy in analysis, it would have understood the material error associated

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[8] Although SEA may not have been aware of the impact of limiting the study to peak periods due to the staff's lack of engineering and/or technical expertise, the same cannot be said of HDR.

with the one-shot and discriminatory use of "peak period delay" and recognized the need to apply uniform analysis standards to all crossings when it made its decisions on mitigation of environmental harms. That, in turn, would have compelled the Board to require at least one grade separation in Barrington from the outset, just as it did in Aurora and Lynwood.

In order to correct the disparate treatment and mitigate the impact of the acquisition for the Barrington area to the same extent it has for the Aurora/Naperville and Lynwood areas, the Board should impose an additional condition requiring CN to mitigate the increased traffic problems in Barrington that are attributed to CN's increased freight traffic moving through the Village. Because Civiltech's 2011 VISSIM analysis included running a traffic delay scenario with a grade separation in existence at U.S. Route 14, it provides the Board with a data-driven approach for calculating the appropriate CN match – one that accurately apportions the cost-share that should accrue to the railroad, and that ***mitigates only for transaction-related rail traffic and not existing conditions***. From Table XI-1 in Civiltech's 2011 Traffic Analysis, it can be seen that CN's increased train traffic will result in an increase of 180 hours in total vehicle delay over a 24-hour period at the rail crossings for the two SRAs running through Barrington (U.S. Route 14 and IL Route 59). Construction of a single grade separation at U.S. Route 14 would reduce delay by 118 hours at U.S. Route 14 and an additional 33 hours at IL Route 59. This equals a total reduction of hours of delay of 151 hours without any other

roadway improvements. The other 31 hours of delay at IL Route 59 would not be mitigated even though they are attributable to CN's increased traffic.

Although Barrington believes that it would be fair and reasonable to require CN to pay 100% of the cost of the grade separation at U.S. Route 14 due to the congestion created by CN traffic at both SRA crossings, and because Barrington would not even be contemplating an underpass in the Village were it not for the need to avoid the damage inflicted by CN's increased traffic, Barrington respectfully submits that CN should pay a minimum of 84% of the cost of constructing the single, essential grade separation at U.S. Route 14. This percentage figure is derived by dividing the 151 hours of benefit at both crossings (reduction in delay) by the 180 hours of increased delay at both crossings. While IL Route 59 meets the criteria established and followed by the Board in awarding grade separations in this case, Barrington is pursuing a grade separation only at U.S. Route 14 at this time. Thus, a minimum 84% contribution from CN is more than fair.

As the Court of Appeals recognized when it affirmed the Board's decision requiring CN to pay for a substantial portion of the grade separations in Aurora and Lynwood, this result would be consistent with the Board's policy of requiring railroads to mitigate transaction-related impacts, but not pre-existing conditions. Barrington respectfully submits that an 84% match, when compared with the comparative bargain that CN realized by acquiring the EJ&E line instead of having to construct its own bypass around Chicago (an alternative that would have been far more expensive) is a fair and equitable

funding allocation. This is particularly the case when CN alone is realizing the financial benefits from the Board's approval of the transaction, while the greater Barrington region will continue indefinitely to bear the burdens that result from it.

III. Additional New Evidence And Substantially Changed Circumstances Support Additional Mitigation As Well As Reopening.

A. The Board Has Committed to Reviewing New Evidence In The Oversight Period That Reveals The Actual Impacts Of The Transaction.

New evidence and substantially changed circumstances compel the Board to reopen to consider for the first time the full impact of CN's freight traffic on Barrington. Civiltech's 2011 VISSIM study is new evidence as it incorporates information that could only be generated after CN had commenced operations over the EJ&E line. As such, it is consistent with the Board's monitoring and oversight condition which is intended to allow the Board to determine "whether applicants have adhered to the various representations made on the record of the proceedings,"[9] and examine the ***actual***, as well as, anticipated "impacts of the transaction" on Barrington caused by the increasing freight rail traffic over the EJ&E.

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[9] As reflected by *Decision No. 27*, served December 21, 2010, slip op. at 1, the Board has already found that "CN knowingly violated the Board's order approving the transaction that mandated CN to report each blocked crossing occurrence on the former EJ&E West rail line exceeding 10 minutes in duration." Furthermore, in extending the monitoring oversight required by the *Approval Decision* for an additional year, the Board expressly noted the process "has and should continue to be a useful mechanism to identify and address potentially significant issues as they arise." *Decision No. 26*, served December 21, 2010, slip op. at 15.

Such information is far superior to that submitted by CN in its Application as it corrects and supplements the original data to reflect what is actually happening post-Acquisition. Based on this new information, the Board should demonstrate that its oversight is meaningful and that it will respond when it discovers consequences that were not fully anticipated or where the railroad had downplayed the potential impact of its actions in the course of the proceeding.

Because the results of the 2008 Civiltech study were not discussed in HDR's VOBTOA or in the FEIS, the only information in the FEIS regarding U.S. Route 14 was taken from HDR's flawed VISSIM study that purported to analyze only the AM and PM peak period vehicular traffic. Given the foregoing, the 2011 VISSIM analysis constitutes new evidence that was not previously considered by the Board.

As the Board also observed in Decision No. 26 (*id.* at 15), the audit process established by the Board "has provided a better picture of how the transaction has impacted affected communities so far." Without question, the same is true of Barrington's 2011 analysis, which has also provided a far better picture of the adverse impact on Barrington and the surrounding communities than the flawed analysis performed by HDR in 2008

B. Civiltech's 2011 VISSIM Study Used Post-Transaction Field Data.

As new evidence in Civiltech's 2011 study conclusively demonstrates, when it approved CN's acquisition of EJ&E in 2008, the Board's failure to grant Barrington any grade separations was based on HDR's misleading analysis that

indicated that "the Barrington area total delay time would increase by 4% and 5% during the AM and PM peak periods." (*Decision No 16, supra,* at 45, n.101). As noted previously, HDR's improper focus on AM and PM peak hours, rather than on a 24-hour period, ultimately caused SEA and the Board to miscomprehend the total delay time attributed to CN's increased freight rail service.

The Board should exercise its reserved authority to address the actual impact on Barrington and regional commuters that live in other, nearby communities, and who utilize the four roadways intersecting with the EJ&E in a 24-hour period, especially U.S. Route 14. The new evidence and substantially changed circumstances require the Board, in the course of its oversight process, to correct the disparate treatment, which is plainly based on the unsupportable rationale that delay for Barrington should only be considered in the context of the AM and PM peak periods.

During the course of oral arguments before the federal Appellate Court, Judge Tatel observed (Tr. at 9) that if the original Barrington VISSIM study conflicted with the HDR VOBTOA study, the Board should have responded to the Barrington study.[10] Of course, because the results of Barrington's 2008 VISSIM study were not mentioned by HDR in its VOBTOA or in the FEIS, the Board was deprived of any opportunity to compare the results of the conflicting VISSIM studies. In order to correct that error of omission, the Board should

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[10] As Judge Tatel also observed during the course of oral argument, the Barrington Traffic Study "is a very powerful piece of evidence" (Tr. at 75) and that the Board would have to respond to it (Tr. at 74).

now consider Civiltech's 2011 traffic study, which not only reflects the current traffic situation in Barrington with only a small percentage of CN traffic that is projected to run over this portion of the EJ&E Line, but also squarely demonstrates the misleading nature of the "peak period" VISSIM traffic study that HDR prepared for SEA in 2008. Of course, as freight traffic increases, delays will only increase if nothing is done to treat Barrington in the same fashion as Aurora and Lynwood where the Board correctly required grade separations based on 24-hour data.

In summary, the Board should reject the erroneous and misleading HDR peak period study and apply a valid 24-hour analysis, thus using the same standard applied to all other communities. Barrington respectfully submits that when the Board adopts an approach that is consistent with the 24-hour approach it utilized for ***all*** other communities on the EJ&E, it will be compelled to find that CN should be required to fund an appropriate percentage of the cost of constructing an underpass that would allow vehicle traffic on Northwest Highway/U.S. Route 14, to flow beneath CN's freight trains, thus providing one unimpeded arterial pass-through for the region's vehicular traffic flowing through Barrington throughout the entire day. It is important to stress that the 2011 Civiltech analysis makes clear that a grade separation would only return vehicular traffic conditions to no-Acquisition levels, thus demonstrating that Barrington is ***not*** asking the Board to "impose mitigation for existing conditions." Rather, ***Barrington is seeking redress only for traffic problems directly caused by CN freight trains.***

C. The Need for a Grade Separation at U. S. Route 14 has been Underscored by the Awarding of a Federal Grant to Begin Preliminary Engineering Work.

In a move that underscores the vital nature of U.S. Route 14 to regional traffic mobility, the U.S. DOT Federal Highway Administration awarded Barrington a $2.8 million TIGER II grant on October 15, 2010 to undertake the preliminary engineering studies for a grade separation between the EJ&E and U.S. Route 14 in Barrington.[11] This move is *de facto* recognition that one arm of the USDOT felt there was a compelling rationale to begin the long and expensive process of rectifying an error made by its administratively affiliated Board when it failed to order a grade separation in Barrington in 2008. This grant for Phase I engineering work supports what had been told to SEA about critical regional mobility impacts during the environmental review process by the Village, CMAP and the Barrington Area Council of Governments (BACOG) since CN announced its intention to purchase the EJ&E.[12]

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[11] Barrington was awarded the planning grant by USDOT in a highly competitive process in which 1700 applications were received, with only 75 grants awarded.

[12] The Chicago Metropolitan Area for Planning (CMAP) supported Barrington's TIGER II grant application in an August 19, 2010 letter to USDOT Secretary Ray LaHood stating, "This project would grade separate U.S. Route 14 from the Canadian National Rail Line to alleviate safety concerns due to significantly increased rail traffic following the Surface Transportation Board's approval of the Canadian National acquisition of the EJ&E Railway Line." This support was consistent with CMAP's DEIS comments (dated September 26, 2008) and FEIS comments (dated December 22, 2008) to the Board prior to its decision approving the transaction. In both comments, CMAP warned SEA that it had omitted a vital SRA from its list of substantially affected crossings, and thus failed to deal adequately with U.S. Route 14.

In announcing the 2010 TIGER II grant to Barrington, congressional leaders noted, "These funds are a critical start toward addressing the vital safety and quality-of-life concerns that have arisen in our communities since the CN merger" and "I am glad that the Department of Transportation understands the importance for safety and mitigation measures and is taking action today to make these rail crossings safer." [Joint Press Release of Senator Richard Durbin and Rep. Melissa Bean dated October 15, 2010.]

Despite this positive first step by USDOT in working to sustain a needed level of regional mobility through this grant, only the Board is empowered to consider this new TIGER II grant evidence and reverse its initial 2008 error by mandating that CN underwrite a substantial portion of a grade separation at U.S. Route 14 rather than relegating any further responsibility to taxpayers. The August 2011 downgrading of the nation's credit rating makes it even more likely that the federal government cannot continue to be held responsible for subsidizing costly public works projects that are necessitated solely by the actions of a single corporation that will realize immense profits as a result of a federal regulator's approval decision -- all the while leaving taxpayers to pick up the tab for correcting ensuing damages. Fiscal realities dictate that it is time during this oversight period to hold CN responsible for rectifying the "substantial adverse effect on vehicular traffic delays" that impact regional mobility at U.S. Route 14 in Barrington, just as the Board had rightly ordered it to do at Route 34 in Aurora and at Lincoln Highway in Lynwood.

D. Industry Trends to Run Longer Trains Indicate that Pre-Acquisition Estimates Regarding Train Speeds and Lengths Will Prove to be Inaccurate.

On July 19, 2011, CN issued a press release in which it announced it "plans to construct two more extended sidings on its Northern Ontario main line this year." The release continued, "CN's longer sidings program is creating sidings of 12,000 to 13,000 feet long from sidings that were previously 6,000 to 7,000 feet in length." It also noted that, "CN's infrastructure improvements to date in Northern Ontario permit the highest average freight train speeds on its entire system – as high as 40 miles per hour." This press release highlights industry trends that are reflective of substantially changed circumstances in the rail industry that the Board did not factor into developing its 2008 approval Decision's mitigation framework.

First, it is clear that the 6,800 foot trains promised in CN's initial application are going the way of the buggy whip. The 2011 Civiltech data gathered from current EJ&E operations shows that 3% of CN's trains on the EJ&E were already in excess of 10,000 feet (a subject that CN never addressed in its application). Those movements occurred during a period that preceded completion of any of the line upgrades CN outlined in its application and when train traffic was only a small percentage of the capacity CN intends to run on the line.

Furthermore, this industry trend of increased train lengths is exploding, which is why the Brotherhood of Locomotive Engineers and Trainmen (BLET) (the Rail Division of the International Brotherhood of Teamsters) representing

approximately 38,000 train operating personnel on the nation's freight and passenger railroads, created an exhibit at the 2011 annual meeting of the National Conference of State Legislatures (NCSL) advocating action to curtail excessively long trains based on the safety concerns these trains create at railroad crossings. According to a January 13, 2010 *Los Angeles Times* article that BLET shared with state legislators, one railroad ran a so called "test" train from Dallas to Long Beach that was 18,000 feet long (or 3 ½ miles)! Given this trend, it is inconceivable that CN will run for long the promised 6,800 foot trains on the EJ&E when the line serves as its Chicago bypass for freight traffic traveling from Canada's rapidly expanding Port of Prince Rupert into the United States and beyond.

Second, in the above-mentioned press release, CN highlights that these long sidings "permit the highest average freight train speeds on its entire system – as high as 40 miles per hour." If 40 mph is the highest possible speed on its entire system, it seems highly likely that in its initial application to the Board CN misrepresented and inflated the 39 mph projected operating speed of its trains on the EJ&E. Even when grade separations at Aurora and Lynwood are completed, there will still be 110 grade level street crossings on the EJ&E and more than a dozen crossings with commuter and other freight rail lines, thus maintaining an average speed of 39 mph – only 1 mph under its system best – is unlikely.

Finally, the 2011 data gathered by Civiltech demonstrates that with only an average 20% increase from pre-acquisition train volumes on the EJ&E in

Barrington for the months of May and June 2011, as opposed to the full 300% rail freight increase projected in CN's application, operating speeds on that segment of the EJ&E averaged only 32 mph. Industry trends, recent CN capital expenditures, and 2011 operating data all clearly call into question the accuracy of the train length and speed operating assumptions upon which the Board relied to frame its mitigation conditions that accompanied approval of the transaction.

IV. Consideration Of The New Evidence Is Timely And Consistent With Condition 72.

Given the unique circumstances of this proceeding, issues of repose and detrimental reliance are nonexistent. CN cannot reasonably contend that it would be prejudiced by the Board's imposition of additional mitigation. In the first place, as noted above, judicial review of CN's arguments regarding payment of the cost of construction of grade separations was completed only seven months ago.

Second, at an earlier stage of the regulatory proceeding, CN specifically requested the Board to approve CN's acquisition and control of EJ&E prior to completion of the environmental process. As CN then argued, "[t]his would fully preserve the Board's rights to impose *any lawful environmental mitigation that it might determine is required with respect to any* Transaction-related activities before those activities occur."[13] CN also stated that if it "proceeded to

[13] Applicants' Petition To Modify The Procedural Schedule To Provide For A Prompt Final Decision On The Merits Under 49 U.S.C. § 11324(d)(1) Subject

close the Transaction, it would be doing so with no assurance as to any environmental conditions that the Board might impose after the closing." *Id.* at 3.

Third, CN chose to consummate the transaction in the face of the Board's oversight condition, which squarely put CN on notice that the Board, for a period of five years, retained jurisdiction to impose additional conditions. In fact, in its first 2011 Quarterly Report, CN clearly warned investors: "The resolution of matters that could arise during the STB's remaining five-year oversight of the transaction, cannot be predicted with certainty, and therefore, there can be no assurance that their resolution will not have a material adverse effect on the Company's financial position or results of operations." [CN Press Release dated April 26, 2011 at 49.] Therefore, CN should not be heard to complain that the Board, by considering new evidence and/or in correcting material error, may not impose an additional grade-separation condition.

Indeed, Condition 72 (Approval Decision at 84) squarely distinguishes this proceeding from other proceedings where the Supreme Court has cautioned against establishing a right to demand rehearings as a matter of law when some new circumstance has arisen or where some new trend has been observed. *See, e.g., Tongue River Railroad Company, Inc.—Construction and Operation—Western Alignment,* FD 30186 (Sub-No. 3) (STB served June 15, 2011), slip op. at 5, *quoting Vt. Yankee Nuclear Power Corp. v. Nat. Res. Def. Council, Inc.,* 435 U.S. 519, 554-55 (1978), and other precedents.

To A Condition Preserving The Environmental *Status Quo* Pending Environmental Review, CN-49 at p. 3 (emphasis added).

In effect, Condition 72 represents the Board's self-imposed, continuing commitment to exercise its jurisdiction to gather and evaluate new information for the next few years in order to impose whatever additional conditions that are warranted by the new evidence. This further distinguishes the instant case from the reasoning expressed in *Tongue River, supra,* slip. op. at 6-7 and n.13. Moreover, this is not a situation where the Board has prepared and issued multiple EISs as was the case in the Tongue River proceedings.[14]

Of the six communities that have not settled with CN, Barrington is the only one, other than Aurora and Lynwood, which has grade-level crossings that meet the SEA criteria for being substantially affected. Finally, Barrington is the only community located on the EJ&E line that was subjected to disparate treatment in terms of grade separation analysis. Hence, there is no realistic fear that an endless procession of petitions for additional mitigation and/or to reopen will be filed.

---

[14] As the Board is aware, parties were given only 68 days to review and respond to the 5-volume DEIS, which consisted of 3,500 pages. Moreover, the Board's final decision was issued a mere 19 days after the 3,100-page FEIS was released. As a result, the procedural schedule herein is far different from cases such as the Tongue River R.R.—Rail Constr. & Oper.—In Custer, Powder River & Rosebud Counties, Mont., FD 30186 (Sub-No. 1) (ICC served Sept. 4, 1985), modified (ICC served May 9, 1986), pet. for judicial review dismissed, N. Plains Res. Council v. ICC, 817 F.2d 758 (9th Cir.), cert. denied, 484 U.S. 976 (1987) (Tongue River I). In that case, and in the later Tongue River proceedings, there were two-year (or more) gaps between the issuance of the DEIS and the FEIS. See Tongue River Railroad Company, Inc.—Construction and Operation—Western Alignment, FD 30186 (Sub-No. 3)(STB served June 15, 2011 at 2). Given the pressure that CN exerted on the Board to complete the review process before the end of 2008, it is only fair and equitable that Barrington be afforded the opportunity at this time to address the methodological and other errors that caused the Board to deny grade separation mitigation for Barrington.

CONCLUSION

For all the above-stated reasons and consistent with the Board's continuing oversight of this transaction, the Board should impose an additional condition requiring CN to bear at least an 84% share of the cost of a grade separation in the Village of Barrington, Illinois at the intersection of the EJ&E Line and U.S. Route 14. Such result is required to provide consistent, equitable mitigation relief as well as correcting material error in the Board's prior Decision authorizing CN's acquisition of the EJ&E Line. The relief requested is also supported by substantial new evidence of record that was not reasonably available to Barrington at an earlier date, as well as changed circumstances associated with CN's expanding freight rail operations through Barrington.

Respectfully submitted,

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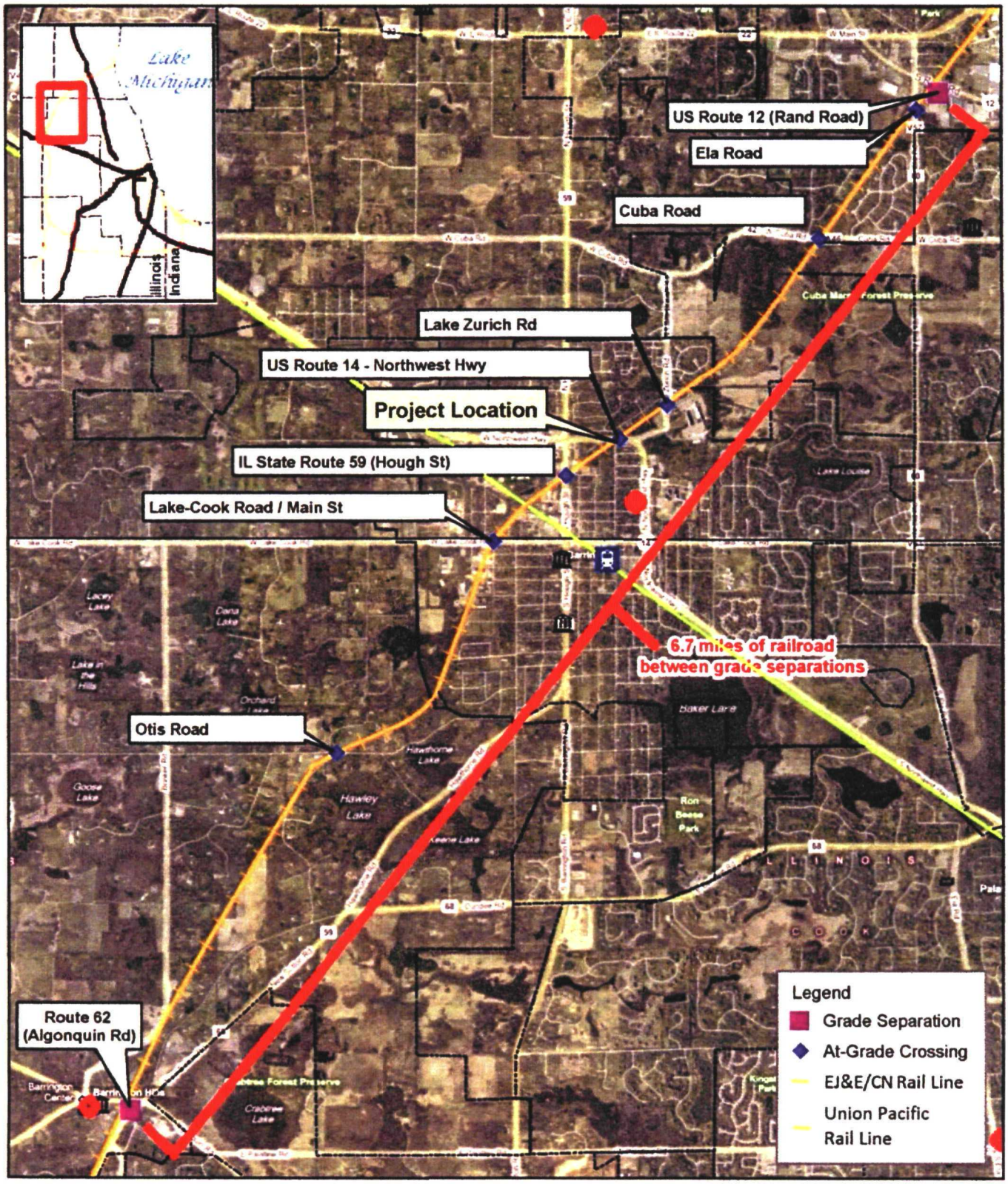
Dated: October 14, 2011

Attachment A

U.S. Route 14 Grade Separation at Canadian National Railroad

Distance between Grade Separations



200 S. Hough St.
Barrington, IL 60010-4399
Phone: 847-304-3400
Fax: 847-381-7506

Projection: State Plane Coordinate System (Illinois East)
Source: Barrington GIS, BAGIS, Cook County and Lake County
Date: August 2010
Prepared by: Village of Barrington Geographic Information Systems

Village of Barrington

CN Railway Traffic Impact Study Update

Final Report

September 1, 2011

ROBERT J. ANDRES
62-35565
REGISTERED PROFESSIONAL ENGINEER OF ILLINOIS

Robert J. Andres

Licensed Professional Engineer of Illinois
Seal Expires: 11/30/2011
Date: 9/1/11

CIVILTECH

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I. INTRODUCTION

This study is an update of a previous traffic impact study ("Barrington TIS") that the Village of Barrington commissioned in 2007 to evaluate the impacts of the proposed Canadian National (CN) Railway acquisition of the Elgin, Joliet & Eastern (EJ&E) Railway Company ("Acquisition"). The previous study compared existing conditions in 2007 to predicted 2015 vehicular traffic and 2015 post- Acquisition rail traffic in order to determine the effects of the Acquisition on traffic mobility and congestion in the Village. The current Traffic Impact Study Update ("TIS Update") builds on the previous study's computer models and updates them based upon actual CN train operational data that was collected within the Village in 2011. This study also reviews the methodology employed in the *Village of Barrington Traffic Operational Analysis* ("VOBTOA") that was relied upon by the STB's Section of Environmental Analysis ("SEA") in preparing the Final Environmental Impact Statement ("FEIS") for the Acquisition. The VOBTOA was prepared by HDR, Inc. ("HDR"), the STB's engineering consulting firm that assisted in the preparation of the environmental analysis and public documents.

II. PURPOSE OF TRAFFIC IMPACT STUDY UPDATE

The *Village of Barrington CN Railway Traffic Impact Study Update* has five primary objectives:

- Review and analyze the methodology used by HDR in developing the VOBTOA that was included as Appendix A-5 in the FEIS.

- Calculate the 24-hour delay impacts of the Acquisition at IL Route 59 and U.S. Route 14 in Barrington using the VISSIM computer modeling software program which, as SEA has acknowledged in the FEIS, is an appropriate tool for use in complex urban environments such as that in Barrington.

- Update the VISSIM analyses developed for the original Barrington TIS to reflect the characteristics of actual CN Railway train operations within the Village that were measured earlier this year.

- Based on characteristics of actual CN train operations, determine the traffic operational benefits of constructing a grade separation on U.S. Route 14 at the CN Railway crossing

- Use the same VISSIM measurement tool to calculate the 24-hour delay impacts of the Acquisition at U.S. Route 34 in the City of Aurora and compare the delay values to those calculated in Barrington. The U.S. Route 34 crossing is similar in many ways to the U.S. 14 crossing in Barrington and is also a location SEA called for construction of a grade separation to mitigate the substantial impacts of the EJ&E Acquisition that were identified in the FEIS.

III. SCOPE OF STUDY

The general scope of the 2011 *Village of Barrington CN Railway Traffic Impact Study Update* is as follows:

- Review the DEIS and FEIS methodologies and findings regarding roadway impacts.
- Collect existing roadway and railway data.
- Develop and calibrate a VISSIM model that simulates 24 hours of operation of the existing roadway and railroad network in the Village of Barrington and in the City of Aurora.
- Forecast future traffic volumes on the area roadway network.
- Develop VISSIM models for Proposed Action (i.e. post-Acquisition) scenarios and analyze impacts of additional trains on the roadway network in both communities.
- Prepare a report summarizing the findings of the traffic engineering studies.

The study area for the 2011 TIS Update in Barrington is depicted in Exhibit A-1 of Appendix A. VISSIM models were run for the following conditions and Post-Acquisition scenarios:

- 2007 Existing Conditions (2007 traffic with 5 EJ&E trains).
- 2015 No Acquisition Conditions (2015 traffic with 5 EJ&E trains).
- 2015 Post-Acquisition – Scenario 1 (2015 traffic with 20 CN trains averaging 5,800 feet long, which is the current average length of CN trains operating through Barrington).
- 2015 Post-Acquisition – Scenario 2 (2015 traffic with 17 CN trains averaging 6,800 feet long and 3 CN trains averaging 10,000 feet long).
- 2015 Post-Acquisition – Scenario 3 (2015 traffic with 20 CN trains averaging 5,800 feet long and a grade separation at U.S. Route 14 crossing).

Exhibit A-2 in Appendix A depicts the roadways and railways that were included in the VISSIM models. For each condition and/or scenario, models were run to simulate a full 24 hours of a typical weekday.

IV. UNIQUE CONDITIONS IN VILLAGE OF BARRINGTON

The Village of Barrington has several unique conditions that affect traffic flow over the CN crossings that must be accounted for in any sophisticated methodology for calculating delays. The proximity of rail crossings along the CN line in Barrington necessitates the activation of warning signals at nearby crossings in tandem, rather than providing constant advance warning times at each crossing. This increases railroad delays at some crossings in relation to delays that would be expected if the crossing was isolated.

Signalized intersections are also located nearby each rail crossing. On all three roadways, traffic signals are interconnected into coordinated systems which span the crossing locations. These systems improve the efficiency of traffic flow without trains, but they can limit the arrival and/or discharge of traffic over the railroad crossing after train events do occur. Any methodology that assumes a uniform vehicle arrival rate at the crossings, as well as a uniform discharge rate cannot be applied to the situation in Barrington because neither of these conditions occurs in Barrington.

Finally, the UP rail line crosses the CN Railway just northwest of the downtown and also crosses two of the three major arterial routes in the Village that are crossed by the EJ&E line. Operation of nearly 70 commuter and freight trains per day on the UP line already has a large impact on traffic flow on the same roadways that will be impacted by the Acquisition. During many hours of the day, it will be likely that traffic flow will not have the time to recover from one train event before another train event occurs.

A methodology that does not account for the interactions of the two rail lines or the cumulative effect of successive train events will not adequately address the unique conditions in Barrington and will fail to calculate the full delays that will result from the Acquisition. Because the impact assessments and the Final Recommended Conditions contained in the FEIS were based on delay calculations that did not address these interactions and cumulative effects, those findings were inaccurate.

V. VISSIM MODELING SOFTWARE

In order to develop accurate estimates[1] of the impacts of the Acquisition on vehicle delays at crossings in Barrington that take into effect the unique conditions in the Village, Civiltech used VISSIM software in both the original 2008 Barrington TIS and this 2011 TIS Update. VISSIM is a powerful microscopic time step and behavior-based simulation program developed to model urban traffic and rail operations. The program models individual driver behaviors and the resulting vehicle interactions to realistically simulate the performance of actual traffic flows. Traffic and rail operations are modeled under actual constraints such as roadway and railway configurations, speed limits, traffic composition, vehicle characteristics, traffic signals, transit stops, train blockages, and driver behaviors, among others.

An extensive number of measures of effectiveness can be extracted from the VISSIM output using its various evaluation settings. The primary performance measure extracted for this study is total vehicle delay over a 24-hour period quantified at each rail crossing, a measure used in the DEIS to determine if highway/railway at-grade crossings would be "substantially affected" by the Acquisition. VISSIM also creates a realistic computerized 3-D animation of its simulations, a feature used for calibration, evaluation, and presentation of models.

[1] The analysis methodology relied upon in the FEIS to calculate roadway delay impacts employed a rudimentary equation for calculating delay that assumes an idealized crossing isolated from any conditions that would influence traffic flow other than the railroad, and which has uniform traffic arrival and departure rates throughout the entire day. The methodology is not accurate in Barrington as it does not consider the effects of nearby traffic signals or signal systems, interactions with another intersecting rail line or the cumulative effects of successive train events, all of which exist at the CN Railway crossings in the Village.

Because of the ability to accurately model complex street network interactions and the resulting vehicular behaviors, calculating delays using VISSIM is superior to the rudimentary methodology used in the DEIS. Furthermore, HDR utilized VISSIM in its Barrington-specific analysis (the VOBTOA[2]) to provide a more detailed analysis of the interaction of trains and vehicular traffic. However, the HDR analysis was narrowly-defined and fell short of what is needed to fully assess impacts because HDR failed to model 24 hours of traffic operation.

A. VISSIM Input Data

Inputs into the VISSIM model included:

- Roadway characteristics, such as alignments, number of lanes, intersection turn channelization, and speed limits.
- Railway configurations.
- Roadway traffic data (based on 2007 and 2008 Village counts and CMAP forecasts), including vehicle composition percentages.
- Railway train count data, including number, length, speed, and type (commuter vs. freight) of trains.
- Traffic signal timing and phasing plans, including vehicle detection characteristics, time-of-day plans, system plans, and railroad pre-emption settings.
- Railroad warning device settings, including train detection devices.

B. VISSIM Output Data

Total daily vehicle delay in hours was determined for each of the three highway/railway at-grade crossings of the former EJ&E line within the Village of Barrington study area:

- EJ&E Crossing of Main Street (Lake Cook Road)
- EJ&E Crossing of IL Route 59 (Hough Street)
- EJ&E Crossing of U.S. Route 14 (Northwest Highway)

The delay output from VISSIM includes the cumulative delay from all sources on the roadway network, such as intersection delays, capacity constraints and traffic flow restrictions or interruptions, in addition to railroad crossing delays. Therefore, in order to extract the railroad crossing delays caused by the Acquisition, it is necessary to subtract the cumulative delays measured along an appropriate segment of roadway for a No-Action scenario from the cumulative delays measured along the same segment of roadway for the post-Acquisition scenario. The difference is the railroad crossing delays that are directly attributable to CN freight traffic on the EJ&E following the Acquisition.

VI. FINAL EIS FINDINGS

On December 5, 2008, the STB issued a Final Environmental Impact Statement that was meant to address all substantive comments received on the DEIS. The FEIS correctly acknowledged "the unique layout of Barrington's streets and two railroads"[3]. Due to these unique conditions, HDR developed the *Village of Barrington Traffic Operational Analysis* which was included as

[2] *See* VOBTOA page 1.
[3] *See* FEIS page 2-39.

Appendix A-5 in the FEIS. HDR's VOBTOA recognized that:[4]

> *A closer review of these conditions was deemed necessary recognizing that vehicular mobility and safety in the Barrington area is a complex issue requiring additional study. Therefore, this more detailed analysis of the interaction of train movements and motorist travel was conducted.*

The VOBTOA employed VISSIM to develop that closer review. However, the VISSIM analyses were conducted for just A.M. and P.M. peak hours rather than over an entire day. During peak hours, the analyses predicted queue length increases of 1,550 feet for the IL Route 59 crossing and 2,100 feet for the U.S. Route 14 crossing[5] as a result of the Acquisition. In fact, at the U.S. Route 14 crossing, the VISSIM simulation showed that the queue created by a single train event in the P.M. peak hour failed to dissipate 20 minutes after the train passed, at which time the simulation was stopped.[6] Despite these substantial increases in peak hour congestion levels, however, the VOBTOA erroneously concluded that *"the increase in train traffic will likely have some impacts on traffic congestion in Barrington but will not considerably worsen traffic congestion or mobility."*[7]

HDR also concluded, albeit erroneously, that:[8]

> *Construction of a grade separation at Hough Street and the EJ&E will not prevent traffic queues on Hough Street, Northwest Highway or Main Street/Lake Cook Street. Therefore construction of a grade separation alone at either the Hough Street or Northwest Highway crossings is not a feasible way to address regional congestion due to capacity constraints at existing signalized intersections.*

As a result, the FEIS did not incorporate any of the VOBTOA VISSIM results into the delay calculations for rail crossings in Barrington to determine substantial effect; and relied instead on the rudimentary delay methodology used previously in the DEIS. In Section 2.5.11 of the FEIS[9], however, SEA concluded that the VOBTOA traffic analysis validated SEA's methodology for evaluating traffic delay and mobility effects and the results confirmed the conclusions SEA reached in the DEIS.

Therefore, in the *Final Recommended Conditions* that pertain to impacts of the Proposed Action in Barrington[10], SEA, based on HDR's analysis, stated that it was:

> *... satisfied that to address the effect on queue length at the intersection of IL 59 and US 14, traffic advisory signs would be useful because the signs would alert drivers not to block the roadway intersection during a train pass.*

Based on its recently concluded 2011 study, Civiltech disagrees with HDR's conclusions in the VOBTOA and SEA's findings and recommendations in the FEIS that pertain to Barrington.

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[4] *See* VOBTOA page 1.
[5] *See* VOBTOA Table 5-5 (page 29) and Table 5-6 (page 36).
[6] *See* VOBTOA Figure 5-12 (page 33).
[7] *See* VOBTOA page 47.
[8] *See* VOBTOA page 48.
[9] *See* FEIS page 2-49.
[10] *See* FEIS Chapter 4, page 4-16.

VII. MATERIAL ERRORS IN FEIS

HDR's VOBTOA contained several significant material errors and omissions that led to incorrect and/or unsupported conclusions in the FEIS. Though SEA acknowledged that VISSIM is a high-level traffic simulation model and HDR used it to analyze the unique traffic issues in Barrington, HDR analyzed only A.M. and P.M. peak hour conditions on Barrington's street network rather than an entire 24-hour period as required by STB's "substantial effect" criteria. Moreover, the peak hours are times during which CN observes voluntary curfews on freight train movements due to the high levels of commuter train traffic on the UP line. Thus, during peak periods, the delay impacts of the Acquisition would be expected to be minimized, making those periods unrepresentative times upon which to base an assessment of the impact of additional trains.

HDR then compounded this error by averaging vehicle delays over the entire modeled street network rather than over the crossing approach roadway segments (as was done for all other EJ&E crossings to measure substantial effects). The street network modeled in the VOBTOA included 5.8 miles of Village streets, a significant portion of which is well beyond the areas affected by train delays. Since the VISSIM model used in the VOBTOA averaged delays over the entire network, it included delays within areas that were far removed from any of the CN crossings. This method of tabulating delays has the effect of minimizing the proportion of delays that is attributable to railroad operations.

Having measured delays during times of limited train activity and having averaged them over an overly broad area of the street network, the VOBTOA concluded:[11]

> *Results of the Village of Barrington Traffic Operational Analysis show that the increase in train traffic on the EJ&E line will likely have some impacts on traffic congestion in Barrington but will not considerably worsen traffic congestion or mobility. The analysis shows that congestion will worsen and mobility will decline with predictions of continued traffic growth. Under the Proposed Action scenario, network-wide total delay time increased by four (4) percent and five (5) percent during the AM and PM peak periods, respectively, over the No Action scenario.*

HDR concluded that congestion "will not considerably worsen" despite the fact that the VISSIM analyses predicted queue length increases of 1,550 feet and 2,100 feet on Hough Street and U.S. Route 14 respectively. It is unclear how increases in the length of traffic back-ups of between ¼ and ½-mile, or vehicle queues from a single train that take more than 20 minutes to dissipate could be characterized as not considerably worse.

Minimizing the peak hour delay results by averaging them over such a large area of the street network also led SEA to erroneously conclude in Section 2.5 of the Final EIS that:[12]

> *The traffic analysis also validated SEA's methodology for evaluating traffic delay and mobility effects. In general, the results of the traffic analysis confirmed the conclusions that SEA reached in the Draft EIS.*

This conclusion was reached despite the fact that HDR's analysis did not validate any 24-hour DEIS delay results at crossings in Barrington that were calculated using SEA's rudimentary analysis procedure. In light of the unsupported conclusion, the Final Recommended Conditions

[11] *See* VOBTOA page 47.
[12] *See* FEIS page 2-49.

in the Final EIS were based on the original rudimentary delay calculations rather than on any VISSIM analyses in HDR's VOBTOA.

Based on HDR's methodology, SEA also concluded that grade separations in Barrington are not reasonable and feasible alternatives for mitigation. This conclusion was reached without any apparent VISSIM analyses of the delay reduction benefits of grade separation scenarios and was unsupported by any facts or data regarding the feasibility of grade separations.

It should also be noted that, though the FEIS recognized on several occasions the importance of Strategic Regional Arterial (SRA) routes to regional mobility, it only mentioned the fact that IL Route 59 is an SRA route in one instance. The FEIS never acknowledged the fact that U.S. Route 14 is an SRA route. The FEIS noted[13], however, that the SRA designation was an important factor in determining the need for a grade separation at U.S. Route 34.

The combination of material errors and unsupported conclusions contained in the FEIS calls into question whether impacts of the Acquisition on crossings in the Village of Barrington were measured without bias and under the same standards as other crossings on the EJ&E line.

VIII. 2007 EXISTING CONDITIONS VISSIM MODEL IN BARRINGTON

A. Model Input Data

Civiltech first developed a VISSIM model to evaluate the same 2007 existing conditions that served as the baseline (pre-Acquisition) conditions that were analyzed in the DEIS. Following is a summary of the data that was collected in order to build the 2007 Existing Conditions VISSIM model that was developed in the original Barrington TIS:

1. 24-Hour Intersection Turning Movement Counts - Intersection turning movement counts were conducted at the following seven intersections throughout the downtown study area in June and July of 2008:

- Lake-Cook Road (Main Street) and Hart Road
- Lake-Cook Road (Main Street) and Dundee Avenue
- Lake-Cook Road (Main Street) and Garfield Street
- Lake-Cook Road (Main Street) and IL Route 59 (Hough Street)
- Lake-Cook Road (Main Street) and Cook Street
- U.S. Route 14 (Northwest Highway) and IL Route 59 (Hough Street)
- U.S. Route 14 (Northwest Highway) and Berry Road/Library Driveway

The 2008 counts were conducted using Video Collection Units (VCUs). A VCU is a portable pole-mounted video camera that records the movement of vehicles over a pre-set period of time. The video data is stored on flash memory cards and later uploaded to the manufacturer's server via the internet for data processing and reduction. Turning movement information is returned in one-minute intervals. Vehicle classification and pedestrian volumes are also quantified by the VCUs. Civiltech staff spot-checked the count results by viewing selected videos and counting the turning movements manually. The VCU results were within 1% to 5% of the manual counts, indicating a very high level of reliability.

[13] *See* FEIS page 4-16.

Historic traffic data and staff observations indicate that the peak hour traffic volumes in downtown Barrington are reduced during the summer months due to summer vacations and school not being in session. Using 2007 traffic data previously collected by the Village of Barrington, the 2008 turning movement counts were adjusted to reflect volumes experienced during the fall of 2007. Comparing the July 2008 trends to November 2007 revealed that the 2008 counts were 10% to 20% lower during the peak A.M. and P.M. peak periods, and about 15% higher during the mid-day period. The 2008 counts were adjusted accordingly to reflect conditions typically experienced during the school year, when peak period traffic is highest. Counts taken in the fall of 2008 indicated that this adjustment of the summertime counts was reasonable and verified that the adjusted counts were close to actual volumes during the fall when school is in session.

The 2007 adjusted hourly turning movement count data was used to input driver routing decisions into VISSIM at each roadway intersection within the study area over a typical weekday. Hourly volumes and truck percentages were also used as volume inputs at the entering links of the modeled roadway network.

2. **24-Hour Average Daily Traffic Counts** - A benefit of utilizing a Video Collection Unit at an intersection for a 24-hour period is that a 24-hour daily traffic count can be ascertained on each leg of the intersection. Due to the close proximity of counted intersections to the EJ&E Railroad crossings, and the limited roadway intersections in between, certain 24-hour intersection counts can be used to determine 24-hour Average Daily Traffic (ADT) volumes at the EJ&E highway/railway at-grade crossings with Main Street, Hough Street and Northwest Highway.

3. **Traffic Signal Characteristics** - Existing traffic signal timing and phasing plans were obtained from IDOT and the Village and input into the existing conditions model using VISSIM's ring and barrier controller module. Multiple signal timing plans were input to match current system timings throughout the day. No railroad preemption exists at any of the signalized intersections near railroad crossings.

4. **Intersection Unmet Demand Measurements** - Standard intersection turning movement counts tally the number of vehicles that pass through a given intersection during the count period. At intersections operating below maximum capacity, a turning movement count is an accurate representation of the travel demand at the intersection. However, at intersections that are operating over capacity (i.e. are oversaturated), a turning movement count will not capture the true demand at the intersection for the given time period.

Oversaturated intersections have one or more movements on which all vehicles will not clear the intersection during one traffic signal cycle. Unmet demand is defined as the number of vehicles available to enter the intersection but which are unable to clear their desired intersection movement in one traffic signal cycle.

Unmet demand data was collected in June and July, 2008, from early morning to late evening on all four legs of the IL Route 59/Main Street intersection and IL Route 59/U.S. Route 14 intersection. Unmet demand results were used in the calibration of the existing VISSIM traffic simulation model.

5. **Railway Configurations** - Using a scaled aerial photograph background and field observations, the UP and EJ&E rail lines were input into the VISSIM model.

6. **24-Hour Railroad Crossing Surveys (EJ&E and UP Trains)** - Video Collection Units were placed at the following highway/railway at-grade crossings for a 24-hour period in June and July of 2008 in order to collect EJ&E and UP train operating characteristics and schedules:

- EJ&E Crossing of Main Street (Lake Cook Road)
- EJ&E Crossing of IL Route 59
- EJ&E Crossing of U.S. Route 14
- UP Crossing of Main Street (Lake Cook Road)
- UP Crossing of IL Route 59

Civiltech staff reviewed each 24-hour video in-house to ascertain the following data from the videos for most of the train events.

- Train type (commuter, commuter express, or freight).
- Direction of travel (inbound/outbound or north/south).
- Number of trains per day.
- Time between the activation of the flashing lights and gates and the arrival of the train.
- Time that the train blocked the crossing.
- Time between the end of the train and the termination of the flashing lights/raising of the gates.
- Train length.
- Train speed.

It should be noted that the observed speeds for existing trains on the EJ&E line were significantly less than CN projected for its freight trains running on the EJ&E. Existing speeds were measured at 16 to 24 mph, while the CN projected average speeds of 37 to 39 mph.

Because of the proximity of the Barrington train station to the UP crossings of Hough Street and Main Street, outbound Metra trains that stop at the Barrington station activate the lights and gates at these two crossings upon their initial approach to the station for approximately 1 to 1-1/2 minutes. Once the outbound Metra train stops at the station, the gates will rise for a short period (depending on the dwell time at the station), then go back down before the train leaves the station and continues northwest bound.

Because the train crossing surveys were completed over a series of different days for the two UP crossings and three EJ&E crossings, the data were compiled to create one schedule for each rail line. For the UP line, the field observations in combination with the published schedule were used to develop the input Metra train schedule.

Likewise, because the surveys were completed over a series of different days, an average train length and speed was determined for each rail line, and in the case of the UP line, for each train type. For the UP rail line, the average Metra train length was 630 feet and the speed was 20 to 30 mph. Freight trains on the UP line were input as 5,000 feet long traveling at 30 mph. On the EJ&E line, freight trains were input as 2,800 feet long traveling at 38 mph.

The compiled train information was input into the 2007 Existing Conditions model for a 24-hour period for both the UP and EJ&E rail lines. Warning devices (flashing lights and gates) were simulated at each highway/railway at-grade crossing. Train detection devices were input and total gate-down times were calibrated based on field and video observations to match existing

conditions.

The Existing Conditions model was first created and run using 2008 traffic volumes so that inputs could be calibrated to reflect actual observed conditions on an hourly basis over a 24-hour period. Calibration was generally achieved by regulating maximum speeds within the core of the downtown. This is a valid calibration method because driveways, minor side streets, and on-street parking were not input into the model. In reality, based on field observations, interaction with these constraints tends to slow the progression of through traffic near the central business district. The speed settings used in the Existing Conditions model were applied identically to the Future Condition models.

Once the 2008 model was calibrated, adjusted 2007 traffic volumes were input to create the 2007 Existing Condition model. Default driver and vehicle characteristics in VISSIM were used throughout all models.

IX. 2015 NO-ACTION CONDITIONS VISSIM MODEL IN BARRINGTON

A. Adjustments from the Existing Conditions Model

Once the Existing Conditions model was prepared and calibrated, several adjustments were made to create a 2015 No-Acquisition Conditions model.

1. **Traffic Adjustments** – The DEIS reflected a 3% annual growth rate to adjust historic traffic count data that SEA collected from various sources to the 2007 base year, as well as to project the adjusted 2007 traffic data to the 2015 design year for which impacts of the Proposed Action were measured. In comparing SEA data to historic traffic data available to the Village as well as to 2008 traffic counts that were conducted on area roadways by the Village, it was clear that the 3% annual growth rate significantly overestimated traffic growth in the Village of Barrington. A comparison of 2008 Village traffic counts to 1999 traffic data collected by the Village for their *North-South Arterial Traffic Study*[14] (NSATS) indicated that little or no traffic growth occurred on Village arterial roadways during the previous 9 years.

Therefore, in order to estimate future travel demand, Civiltech obtained 2030 traffic forecasts from the Chicago Metropolitan Agency for Planning (CMAP) for roadways in the study area. Traffic projections for 2015 were then developed by interpolating between the 2030 CMAP forecasts and the Village's 2007 traffic counts. The resulting 2015 forecasts were less than those used by SEA in the DEIS. SEA forecasted about a 27% increase in traffic by 2015 compared to Civiltech's 8% growth forecast. In the Final EIS, SEA updated their existing traffic counts at some crossing locations and adjusted their 2015 forecasts slightly in Barrington.

Table IX-1 shows a comparison of traffic data available from the Village's 1999 study, data used in the 2008 Barrington TIS and data used in the DEIS and the FEIS:

[14] Village of Barrington North-South Arterial Traffic Study, Volume 1 – Existing Conditions Report dated July 19, 2000.

Table IX-1
Average Daily Traffic Volumes on Barrington Roadways at CN Railway Crossings
(Vehicles per Day)

Roadway	Village NSATS	Barrington TIS		Draft EIS		Final EIS	
Year	1999	2007	2015	2007	2015	2007	2015
U.S. Route 14	28,100	28,500	30,700	26,573	33,662	26,800	33,949
IL Route 59	21,600	21,300	22,800	18,990	24,056	17,800	22,549
Main Street	19,900	18,100	19,700	11,227	14,222	11,227	14,222

The Barrington TIS traffic data shown above was also used in the 2011 TIS Update.

2. **Traffic Signals Adjustments** – Based on the assumption that traffic signal timings would be re-optimized by IDOT between now and 2015 to account for traffic volume growth, traffic signals were re-optimized throughout the network for the 2015 No-Action model using Synchro software. Identical revised traffic signal timings were carried through to each of the Proposed Action models as well.

3. **Train Adjustments** - For the EJ&E line, the 2015 No-Action Conditions model included the same number of trains as observed under existing conditions (five trains). The existing EJ&E train lengths and speeds were adjusted to match the assumptions used in the DEIS for the No-Action condition (2,800 feet long at 38 mph). No adjustments were made to the UP trains or schedule.

The 2015 No-Action Conditions model used the existing pre-train arrival gate down times and post-train departure gate up times that were observed for the EJ&E line crossings. Due to the design of the railroad warning signal circuits on the EJ&E line, some of these pre and post gate down times are substantially longer than the minimum Federal requirements.

X. 2015 POST-ACQUISITION MODELS IN BARRINGTON

A. Adjustments from the 2015 No-Action Conditions Model

Once the 2015 No-Action Conditions model was completed, only the train settings were adjusted in the creation of 2015 Acquisition Scenario models to reflect projected CN train operations. No adjustments were made to roadway traffic volumes, traffic signal or signal system timings, or to the number of UP trains or their schedule.

In the original 2008 Barrington TIS, several different post-Acquisition scenarios were modeled based on CN projections of 2015 train volumes and average speed that were contained in the DEIS. Since CN was not actually running freight trains at the time the Barrington TIS was prepared, no data was available on the times of day CN would operate freight trains. Thus, a train schedule had to be assumed. Because vehicle delays on the roadway network will vary significantly depending upon the time of day that train events occur, modeling a realistic train

schedule is critical to the accuracy of the VISSIM model results.

Since the initial pre-Acquisition Barrington TIS was completed, the STB approved CN's acquisition of the EJ&E rail line and CN began freight operations on the line. Though the freight operations are not as yet up to the levels forecast by CN, it is now possible to develop a more realistic schedule for CN trains for use in the VISSIM models by observing 2011 rail operations.

Between May 12th and June 15th of 2011, the Village observed CN rail operations along a 3,910-foot section of railroad tracks within the Village using two Video Collection Units (VCUs). From the video data, it was possible to determine the number of trains, their direction, the time of day they passed through the Village, and their speeds and lengths. In total, 211 trains were observed during the 35-day observation period. Table A-1 in Appendix A summarizes the results of the train survey.

CN has projected that it would run 20 trains per day through the Village by 2015. The average train length and speed were predicted to be 6,800 feet long and 39 mph respectively. The train data collected by the Village indicated that the current rail traffic averages 6 trains per day – only one extra train added daily over the baseline of five. The trains are running slower than CN predicted (an average speed of 32 mph), and the majority of trains are shorter than predicted (an average length of 5,800 feet). From Table A-1 of the Appendix, it can also be seen that CN typically runs shorter trains during the day (6 A.M. to 6 P.M.) and longer trains at night and in the early morning hours.

The data in Table A-1 was used to develop a forecasted CN Railway train schedule that was input into the VISSIM model for the 2015 Post-Acquisition scenarios. The 20 trains per day that were forecasted by CN in 2015 were spaced throughout the day to mirror the times that CN ran trains during the observation period. In addition, the speeds and lengths of each forecasted train reflected the operating characteristics of CN trains observed during the respective hours.

B. Post-Acquisition Scenarios

Post-acquisition 24-hour VISSIM models were developed for three scenarios which varied either CN train operations or the street network configuration as described below.

1. **Scenario 1-** This scenario utilizes the roadway traffic volumes, traffic signal and signal system timings, and the UP train volumes and schedule contained in the 2015 No-Action VISSIM model. However, in place of the EJ&E train data, Scenario 1 includes the CN freight train forecasts contained in the DEIS of 20 trains per day. The data developed from the survey of CN rail operations that is shown in Table A-1 was used to develop a forecasted CN Railway train schedule that was input into the VISSIM model for Scenario 1. Table A-2 in Appendix A depicts the estimated Scenario 1 train schedule. The train schedule also varies train speeds and train lengths throughout the day based on existing CN operating characteristics. Train speeds were varied between 30 and 35 mph with an average speed of 32 mph. Train lengths varied between 3,800 feet and 7,800 feet with an average length of 5,835 feet.

2. **Scenario 2-** This scenario is identical to Scenario 1 except that in place of modeling 20 trains that reflect the average observed CN train length of 5,800 feet, Scenario 2 models 20 train events with 17 trains that are each 6,800 feet long (identical to the average length projected by CN), and 3 trains that are 10,000 feet long. This scenario is intended to model the longer train lengths predicted by the CN, as well as to reflect the current trend in railroad freight operations which is to run longer freight trains. The CN ran seven 10,000-foot or

longer freight trains through Barrington during the observation period.

Table A-3 in Appendix A depicts the estimated Scenario 2 train schedule. The train schedule varies train speeds throughout the day based on existing CN operating characteristics. Train speeds were varied between 28 and 35 mph with an average speed of 32 mph to reflect the observed conditions. The 10,000-foot long trains were scheduled at the times of day that the CN actually ran trains of that length through the Village.

3. **Scenario 3-** This scenario is identical to Scenario 1 in terms of the CN train operations that were modeled. Scenario 3 models 20 CN trains in 2015 that reflect the current operating characteristics observed through Barrington (5,800-foot average train length with an average speed of 32 mph). The projected train schedule for Scenario 3 is shown in Table A-2.

Scenario 3 differs from the previous two scenarios, however, in the street network characteristics that were modeled. Scenario 3 models a highway/railway grade separation on U.S Route 14 in place of the existing at-grade crossing.

Scenario 3 did not reroute any vehicular traffic from IL Route 59 onto U.S. Route 14, even though some rerouting to avoid train delays would be likely as a result of the availability of a nearby grade separation. The ability to avoid train delays by using the underpass would reduce the 24-hour train delays at the IL Route 59 crossing.

This scenario also did not reduce gate down times at the IL Route 59 crossing even though changes in track circuits that would be made possible by the grade separation would allow advance warning times at IL Route 59 to be reduced by perhaps 30 seconds or more. This could further reduce 24-hour train delays at the IL Route 59 crossing.

XI. BARRINGTON VISSIM MODELING RESULTS

The results of the VISSIM modeling that was completed for the 2007 Existing Condition, the 2015 No-Action Condition and the three 2015 Post-Acquisition scenarios are shown in Table XI-1. The results show the total 24-hour vehicle delays measured on the roadway segments that flank the crossings at U.S. Route 14 and IL Route 59 for each of the conditions or scenarios that were modeled. Each result represents the average of the total segment delays obtained from 20 individual computer runs of the respective VISSIM model.

These delay totals include vehicle delays from all sources (both railroad and non-railroad vehicle delays). By subtracting the total delay for the No-Action Condition from that of a post-Acquisition scenario, the 24-hour delay total that is solely attributable to the additional CN Railway train traffic can be determined.

Table XI-1

2011 Village Traffic Impact Study Update – VISSIM Modeling Results

Comparison of Total Daily Vehicle Delay at CN Railway Crossings
In Village of Barrington and City of Aurora

VISSIM Model Scenario	Total 24-Hour Roadway Segment Delay (Hours)		
	Village of Barrington Rail Crossings		City of Aurora Rail Crossing
	U.S. Route 14	IL Route 59	U.S. Route 34
2007 Existing Conditions (Pre-Acquisition) 2007 Traffic with EJ&E Trains (5 trains in Barrington, 16 trains in Aurora)	207	545	120
2015 No-Action Condition (No Acquisition) 2015 Traffic with EJ&E Trains (5 trains in Barrington, 16 trains in Aurora)	467	1,085	180
STB Criterion for Substantial Effect Change from No Acquisition	≥40	≥40	≥40
2015 Scenario 1 – Post Acquisition without Grade Separations 2015 Traffic with CN Trains (20 @ Avg 5,800' in Barrington, 40 @ Avg. 5,500' in Aurora)	583	1,149	294
Change from No Acquisition	+116	+64	+114
2015 Scenario 2 - Post Acquisition without Grade Separations 2015 Traffic with CN Trains (17 @ 6,800', 3 @ 10,000' in Barrington)	589	1,153	N/A
Change from No Acquisition	+122	+68	N/A
2015 Scenario 3 – Post Acquisition with Grade Separations at U.S. Route 14 & U.S. Route 34 2015 Traffic with CN Trains (20 @ Avg. 5,800' in Barrington, 40 @ Avg. 5,500' in Aurora)	465	1,116	165
Change from No Acquisition	-2	+31	-15

A. Barrington IL Route 59 Crossing Results

From Table XI-1, it can be seen that the 2015 Scenario 1 train traffic will result in an increase in total vehicle delay of 64 hours over a 24-hour period at the IL Route 59 crossing compared to the No-Action Condition. Scenario 1 represents 20 trains per day that average 1,000 feet less than the train lengths predicted by CN in 2015.

The total delay increase of 64 hours is significantly greater than the 19-hour delay increase predicted in the FEIS for this crossing.[15] This difference demonstrates how much the rudimentary DEIS methodology underestimated the actual delays caused by the Acquisition in Barrington. Moreover, the 64-hour delay increase is about 1½ times the "substantial effect" threshold of 40 hours. Thus, the IL Route 59 crossing will be substantially affected by the Acquisition as a result of the crossing delay criterion in addition to the queue length criterion that was previously identified in the DEIS.

Post-Acquisition trains longer than those currently operating in Barrington will increase vehicle delays at IL Route 59 even more. With the longer trains modeled under Scenario 2, the IL Route 59 crossing will experience an increase in vehicle delay of 68 hours over a 24-hour period.

B. Barrington U.S. Route 14 Crossing Results

The VISSIM modeling results are even more pronounced at the U.S. Route 14 crossing. From Table XI-1, it can be seen that the 2015 Scenario 1 train traffic will result in an increase in total vehicle delay of 116 hours over a 24-hour period at the U.S. Route 14 crossing compared to the No-Action Condition.

The total delay increase of 116 hours is significantly greater than the 29-hour delay increase predicted in the FEIS for this crossing[16] and it is nearly 3 times the "substantial effect" threshold of 40 hours. Thus, contrary to the findings of the FEIS, the U.S. Route 14 crossing will, in fact, be substantially affected by the Acquisition.

Trains longer than those currently operating in Barrington will increase vehicle delays at U.S. Route 14 even more. With the longer trains modeled under Scenario 2, the U.S. Route 14 crossing will experience an increase in vehicle delay of 122 hours over a 24-hour period.

Scenario 3 in the Village of Barrington models a highway/railroad grade separation on U.S. Route 14. The results for Scenario 3, which are shown in Table XI-1, indicate that contrary to the findings of the VOBTOA,[17] the delay reduction benefits of a grade separation at U.S. Route 14 will be substantial, even without any capacity improvements at upstream or downstream signalized intersections.

Railroad crossing delays on U.S. Route 14 attributable to the Acquisition will be eliminated with construction of a grade separation, but the benefits will extend well beyond U.S. Route 14 itself. IL Route 59 will see substantial benefits as well. Post-Acquisition delays at the IL Route 59 CN

[15] Table A.5-1 in the FEIS Appendix A-5 predicts a Proposed Action delay increase at IL Route 59 of 1,164.8 minutes or 19.4 hours.
[16] Table A.5-1 in the FEIS Appendix A-5 predicts a Proposed Action delay increase at U.S. Route 14 of 1,757.8 minutes or 29.3 hours.
[17] *See* VOBTOA page 48.

crossing will be reduced by more than 50% because traffic flow across that crossing will no longer have to interact with the effects of simultaneous traffic flow interruptions on U.S. Route 14. Had HDR modeled a grade separation alternative in the VOBTOA, it would not have incorrectly concluded that a grade separation would have no benefit without intersection capacity improvements.

XII. COMPARISONS TO CN CROSSING AT U.S. ROUTE 34 IN AURORA

The EJ&E crossing at U.S. Route 34 (Ogden Avenue) in the City of Aurora was one of two crossings SEA concluded warranted construction of a grade separation as an appropriate measure to mitigate the substantial effects of the Proposed Action. Using the rudimentary DEIS methodology to determine the increase in total crossing delay caused by the Acquisition, SEA calculated that the total 24-hour delay increase would be 54 hours, which is above the STB's threshold for substantial impact of 40 hours. The FEIS stated the following regarding the U.S. Route 34 crossing in the Final Recommended Conditions:[18]

> *Ogden Avenue (US 34) presently carries a very high volume of traffic, reflecting its importance to mobility in the region. Indeed, as noted by CMAP, US 34 is a Strategic Regional Arterial (CMAP 2008). This designation confirms the importance of US 34 to the region's mobility. Moreover, alternate routes are not readily available in the vicinity of the highway/rail at-grade crossing. US 34 also meets the total vehicle delay and exposure criteria used in SEA's analysis of the Proposed Action. Because of these transportation and safety factors, as well as high vehicle volume on the roadway, the excessive amount of delay, the importance of the roadway, and the lack of viable alternate routes, SEA has concluded that grade separation would be warranted and appropriate mitigation for this roadway.*

The magnitude of the impacts of the Proposed Action at U.S. Route 34 was so great, that the STB ordered the CN to pay 67% of the cost of constructing the grade separation improvement.

The U.S. Route 14 crossing in Barrington has many factors in common with the U.S. Route 34 crossing in Aurora. They are both SRA routes that carry very high volumes of traffic and that have no viable alternate routes. In fact, the nearest alternative grade-separated crossing of the railroad to U.S. Route 14 (the Rand Road crossing) is more than twice as far away as the nearest alternative grade-separated crossing to U.S. Route 34 (the McCoy Drive crossing). Moreover, Route 14 has other important factors that do not exist in Aurora, such as a nearby crossing rail line, a nearby crossing major arterial highway and other factors which affect the ability of traffic queues to discharge freely, . Table XII-1 shows a comparison of existing and future conditions at both locations.

From Table XII-1, it can be seen that though the two crossings have many similarities, the Ogden Avenue crossing is predicted to carry twice the number of trains in 2015 as the U.S. Route 14 crossing and 50% more traffic based on SEA's traffic forecast for Ogden Avenue. That additional traffic, however, is more than offset by the facts that the U.S. Route 14 crossing has a nearby major intersection that limits the ability of traffic queues to discharge freely after train events, as well as a crossing railway carrying nearly 70 trains per day that also affects traffic flow at the nearby major intersection.

[18] *See* FEIS Chapter 4 – Final Recommended Conditions, page 4-16.

In order to provide a valid comparison of the impacts of the Acquisition at the two crossings using an accurate measuring tool, VISSIM models were developed for the U.S. Route 34 crossing to compare vehicle delay impacts to those measured with VISSIM at the CN Railway crossings in Barrington.

Table XII-1

Comparison of CN Railway Crossings of U.S. Route 14 in Barrington and U.S. Route 34 in Aurora

Comparison	U.S. Route 14	U.S. Route 34
SRA Route	Yes	Yes
Nearby Rail Line that also Impacts Traffic Flow	Yes	No
Nearby SRA Route that also Impacts Traffic Flow	Yes	No
Nearby Available Alternate Route	No	No
Travel Distance to Nearest Alternate Grade Separation	4-6 miles	2-3 miles
2007 Average Daily Traffic Volume	28,500 vpd	36,400 vpd
2015 Average Daily Traffic Volume	30,700 vpd[1]	46,110 vpd[2]
Existing Roadway Capacity Constraints	Yes	Yes
Potential Queue Discharge Delays	Yes	No
Meets FHWA Exposure Criterion	No[3]	Yes
Pre-Acquisition Daily Train Volumes	5 trains	16 trains
Post-Acquisition Daily Train Volumes	20 trains 300% increase	40 trains 150% increase
Increase by 2015 in Total Daily Vehicular Delay at Crossing due to CN Freight Trains	116 to 122 hours	114 hours
Designated as Substantially Affected Crossing in FEIS	No[4]	Yes
Increase in Hours of Daily Vehicular Delay in 2015 Due to CN Freight Traffic	+116 to +122	+114

Notes:

[1] Civiltech's Village of Barrington forecast. The FEIS forecast was 33.949 vpd. The U.S. Route 14 forecast ADT is the third highest of any of the roads that cross the EJ&E.

[2] FEIS forecast.

[3] Although the Lynwood crossing also fell short of that exposure factor criterion, the Board found that it should be grade separated.

[4] The rudimentary analysis methodology first employed by HDR coupled by their inadequate VISSIM analysis led to U.S. Route 14 being left off the list of "substantially affected" crossings for the entire environmental review process.

XIII. 2007 EXISTING CONDITIONS VISSIM MODEL IN AURORA

A 2007 Existing Conditions VISSIM model was developed for the U.S. Route 34 crossing in order to evaluate the same 2007 existing conditions that served as the baseline (pre-Acquisition) conditions that were analyzed in the DEIS. Similar to the procedure used in Barrington, 24-hour turning movement counts were conducted at signalized intersections adjacent to the railroad crossing using VCU's to develop 2011 traffic volumes. These volumes were then adjusted backwards to match the 2007 volumes reported in the DEIS. Using these data along with 2007 EJ&E train data contained in the DEIS, a 2007 Existing Conditions VISSIM model was developed at Ogden Avenue. The model was run 20 times and the delay results were averaged to develop the Total 24-hour Roadway Segment Delay value that was reported in Table XI-1 for the crossing.

XIV. 2015 NO-ACTION CONDITIONS VISSIM MODEL IN AURORA

A. Adjustments from the Existing Conditions Model

For the EJ&E line, the 2015 No-Action Conditions model included the same number of trains as observed under existing conditions (16 trains). The existing EJ&E train lengths and speeds were adjusted to match the assumptions used in the DEIS for the No-Action condition (3,900 feet long at 32 mph). The 2015 No-Action Conditions model used the current pre-train arrival gate down times and post-train departure gate up times that were observed for the CN line crossing in 2011.

XV. 2015 POST-ACQUISITION MODELS IN AURORA

A. Adjustments from the 2015 No-Action Conditions Model

Once the 2015 No-Action Conditions model was completed for Ogden Avenue, only the train settings were adjusted in the creation of 2015 Post-Acquisition Scenario models to reflect projected CN train operations. No adjustments were made to roadway traffic volumes, traffic signal or signal system timings.

CN is currently operating trains on the former EJ&E rail line, though its freight operations are not as yet up to the levels forecast by CN. A projected 2015 train schedule for this crossing was developed for use in the VISSIM models by observing 2011 rail operations.

Between June 27th and June 30th of 2011, CN rail operations were recorded at the crossing using a VCU. From the video data, it was possible to determine the number of trains, their direction, time of day they passed through the City, and their speeds and lengths. In total, 60 trains were observed during the 3-day observation period. Train speeds ranged between 26 mph and 42 mph with an average speed of 34 mph. Train lengths ranged between 3,500 feet and 8,800 feet with an average length of 5,500 feet. Table A-4 in Appendix A details the results of the train survey.

CN has projected it would run 40 trains per day through the City of Aurora by 2015. The average train length and speed were predicted to be 6,200 feet long and 39 mph, respectively. The observed train data indicated that the current rail traffic averages 20 trains per day. The trains are running slower than CN predicted (an average speed of 34 mph), and the majority of

trains are shorter than predicted (an average length of 5,500 feet).

The observed train operational data in Table A-4 were then used to develop a 2015 projected CN Railway train schedule at Ogden Avenue for the 40 train movements predicted for the Acquisition in a similar manner to the schedule developed in Table A-2 for Barrington. Table A-5 depicts the estimated Scenario 1 and Scenario 3 train schedule. The train schedule varies train speeds and train lengths throughout the day based on existing CN operating characteristics. Train speeds were varied between 26 and 42 mph with an average speed of 34 mph. Train lengths varied between 3,500 feet and 8,800 feet with an average length of 5,500 feet.

B. Post-Acquisition Scenarios

Post-Acquisition 24-hour VISSIM models which varied either CN train operations or the street network configuration were developed for two scenarios as described below for the U.S. Route 34 crossing.

1. **Scenario 1-** This scenario utilizes the roadway traffic volumes and traffic signal and signal system timings contained in the 2015 No-Action VISSIM model for Ogden Avenue. However, in place of the EJ&E train data, Scenario 1 includes the CN freight train forecasts contained in the DEIS of 40 trains per day along with use of current train operating patterns as observed this year. Table A-5 (Appendix A) depicts the estimated Scenario 1 train schedule.

2. **Scenario 3-** This scenario is identical to Scenario 1 in terms of the CN train operations that were modeled. However, Scenario 3 differs from Scenario 1in the street network characteristics that were modeled. Scenario 3 models a highway/railway grade separation on U.S Route 34 in place of the existing at-grade crossing.

C. Aurora VISSIM Modeling Results

The results of the VISSIM modeling that was completed for the 2007 Existing Condition, the 2015 No-Action Condition and the two 2015 Post-Acquisition scenarios are shown in Table XI-1. The results show the total 24-hour vehicle delays measured on the roadway segment that flanks the crossing at U.S. Route 34 for each of the conditions or scenarios that were modeled. Each result represents the average of the total segment delays obtained from 20 individual computer runs of the respective VISSIM model.

These delay totals include vehicle delays from all sources (both railroad and non-railroad vehicle delays). By subtracting the total delay for the No-Action Condition from that of a Post-Acquisition scenario, the 24-hour delay total that is solely attributable to the additional CN Railway train traffic can be determined.

From Table XI-1, it can be seen that the 2015 Post-Acquisition under Scenario 1 train traffic will result in an increase in total vehicle delay of 114 hours over a 24-hour period at the U.S. Route 34 crossing compared to the No-Action Condition. Scenario 1 represents 40 trains per day that average 700 feet less than the train lengths predicted by the CN Railway in 2015. The total delay increase of 114 hours is significantly greater than the 54-hour delay increase predicted in the FEIS for this crossing.[19]

[19] Table A.5-1 in the FEIS Appendix A-5 predicts a Proposed Action delay increase at U.S. Route 34 of 3,244.2 minutes or 54.1 hours.

Scenario 3 in the City of Aurora models a highway/railroad grade separation on U.S. Route 34 at the CN Railway. The results for Scenario 3 that are shown in Table XI-1 indicate that, as one would expect, the delay reduction benefits of a grade separation will be substantial.

XVI. COMPARISON OF IMPACTS AT THE BARRINGTON U.S. ROUTE 14 AND AURORA U.S. ROUTE 34 CROSSINGS

In recommending a grade separation as the appropriate mitigation measure for the substantial impacts that the Acquisition will cause at the U.S. Route 34 crossing in Aurora, SEA cited the following critical factors in the Final Recommended Conditions that set this crossing apart from all but one other:[20]

- U.S. Route 34 presently carries a very high volume of traffic, reflecting its importance to mobility in the region.
- U.S. Route 34 is a Strategic Regional Arterial, further confirming its importance to the region's mobility.
- Alternate routes are not readily available in the vicinity of the highway/rail at-grade crossing.
- U.S. Route 34 would experience an excessive amount of delay as a result of the Proposed Action that is well above the STB's substantial effect criterion.
- U.S. Route 34 meets the FHWA exposure criteria for consideration of a grade separation.

When measured against the above criteria, the conditions and impacts at the U.S. Route 14 crossing in Barrington are comparable to those at the U.S. Route 34 crossing in Aurora.

- U.S. Route 14 carries very high traffic volumes and is one of the most heavily traveled roadways in the area, reflecting its importance to mobility in the region. Its ADT is third highest of all crossings on the EJ&E – higher even that that of U.S. Route 30 in Lynwood.
- U.S. Route 14 is designated as an SRA route, further confirming its importance to the region's mobility.
- Alternate routes are not readily available in the vicinity of the U.S. 14 highway/rail at-grade crossing. In fact, all other nearby available routes not only cross the CN Railway, but they cross the UP rail line as well.
- U.S. Route 14 will experience an excessive amount of delay as a result of the Acquisition that is well above the STB's substantial effect criterion. When measured using the appropriate analysis tool, the delay increase that will result from the Acquisition at U.S. Route 14 is 116 hours per day compared to a 114-hour increase at U.S. Route 34.

[20] *See* FEIS Chapter 4 – Final Recommended Conditions, page 4-16. The other crossing recommended for a grade separation was the U.S. Route 30 crossing in the Village of Lynwood.

The only criterion cited by SEA that the U.S. Route 14 crossing falls short on compared to the Aurora crossing is that the FHWA exposure factor is less than one million. However, it should be noted that the U.S. Route 30 crossing in Lynwood, IL, which was the only other crossing recommended by SEA for a grade separation, also fell below the FHWA exposure factor threshold. Despite the fact that U.S. Route 14 fell below the threshold, the U.S. Department of Transportation Federal Highway Administration has awarded the Village of Barrington a Tiger II Grant to undertake Phase I engineering work for a grade separation at this crossing. VISSIM modeling of grade separation alternatives at both the U.S. Route 34 and the U.S. Route 14 crossings demonstrated comparable congestion relief benefits.

XVII. TRAFFIC IMPACT STUDY UPDATE – SUMMARY OF FINDINGS

A. Material Errors in FEIS

As a result of the original 2008 *Village of Barrington CN Railway Traffic Impact Study* and this 2011 *Traffic Impact Study Update*, Civiltech has identified several significant material errors and omissions that led to incorrect or unsupported conclusions in the FEIS.

In preparing the *Village of Barrington Traffic Operational Analysis* (VOBTOA), HDR, on behalf of SEA, used the same high-level traffic simulation modeling software in the FEIS that Civiltech used to reevaluate traffic impacts of the Acquisition in Barrington. However, HDR applied that software to just peak hours, which are times of voluntary CN train curfews, rather than over 24 hours, which was the period used by the Board to evaluate substantial effects. The afternoon simulation in the VOBTOA was also terminated 20 minutes after a single P.M. peak hour train event, even though vehicle queues from that train had not fully dissipated. These errors were compounded by measuring peak period delay increases over the entire street network rather than at individual crossings, further diluting the impacts of additional CN trains.

Having measured delays during times of limited train activity and having averaged them over a large area of the street network, HDR caused SEA to conclude that congestion will not considerably worsen as a result of the Acquisition. This conclusion was reached despite the fact that HDR's high-level analyses predicted queue length increases on Village streets of between ¼ and ½-mile as a result of the Acquisition.

Based on HDR's narrow application of modeling for the FEIS, SEA erroneously concluded that the traffic analyses validated SEA's rudimentary methodology for evaluating traffic delay and confirmed the conclusions reached in the DEIS. SEA reached those conclusions despite the fact that the analyses HDR presented did not validate any 24-hour DEIS delay results at crossings in Barrington that were calculated using SEA's initial rudimentary analysis procedure.

SEA also concluded that grade separations in Barrington were not reasonable and feasible alternatives for mitigation. This conclusion was reached without any apparent analyses of the delay reduction benefits of grade separations and was unsupported by any facts or data regarding the feasibility of grade separations in the Village.

The combination of material errors and unsupported conclusions contained in the FEIS calls into question whether impacts of the Acquisition on crossings in the Village of Barrington were measured without bias and under the same standards as other crossings on the EJ&E line.

B. Village of Barrington Traffic Impact Study Update Findings

The results of the VISSIM studies performed for the 2011 *Village of Barrington Traffic Impact Study Update* are in substantial opposition to the findings and conclusions in the DEIS and the FEIS. Following are the major findings from the updated analyses:

- Using the high-level VISSIM traffic simulation model instead of SEA's rudimentary analysis procedure, this study found that both the IL Route 59 and the U.S. Route 14 crossings would be "substantially affected" by the Proposed Action according to STB criteria. Depending upon which future train scenario is utilized:
    - IL Route 59 would experience an increase in total 24-hour rail crossing delay of between 64 and 68 vehicle-hours as a result of the Acquisition. This is more than 50% greater than the STB substantial effect criterion.
    - U.S. Route 14 would experience an increase in total 24-hour rail crossing delay of between 116 and 122 vehicle-hours as a result of the Acquisition. This is 2 ½ to 3 times the STB substantial effect criterion.
- A similar VISSIM analysis was conducted for the U.S. Route 34 crossing of the CN Railway in the City of Aurora to compare impacts of the Acquisition to those in Barrington using the same analysis tool. The VISSIM model for U.S. Route 34 predicted an increase in total 24-hour rail crossing delay of 114 vehicle-hours as a result of the Acquisition. SEA characterized the level of delay at this crossing as "excessive". Due in part to the magnitude of the delay increase, SEA recommended construction of a rail/highway grade separation at the U.S. Route 34 crossing.
- As the VISSIM study demonstrates, the magnitude of the delay increase at the U.S. Route 14 crossing is similar to the delay increase at U.S. Route 34, despite the fact that the Aurora crossing is projected to carry twice as many trains and 50% more roadway traffic than the U.S. Route 14 crossing. This result is due to the unique complexity of Barrington's street system and the delays caused by interactions with the crossing UP rail line that are not shared with other communities along the former EJ&E line.
- The U.S. Route 34 crossing was cited by SEA in their recommendation to grade separate it as a heavily traveled Strategic Regional Arterial route that did not have any nearby available alternate routes. U.S. Route 14 is also a heavily traveled SRA route that does not have any nearby alternate routes that could be used to avoid train delays. In fact, all nearby routes not only cross the CN Railway, but they cross the UP Railroad as well.
- The VISSIM modeling in Barrington predicted a substantial benefit to the Village roadway network as a result of grade separating the U.S. Route 14 crossing. That grade separation would reduce 2015 total 24-hour vehicle delays on both IL Route 59 and U.S. Route 14 to nearly the levels expected under the No-Acquisition scenario.
- The only criterion cited by SEA that the U.S. Route 14 crossing falls short on compared to the Aurora crossing is that the FHWA exposure factor is less than one million. However, despite that fact, the USDOT has awarded the Village a Tiger II Grant to undertake Phase I engineering work for a grade separation at this crossing.

These findings demonstrate that the impacts of the Acquisition in the Village of Barrington will not only be substantial, but at the U.S. Route 14 crossing (which will be the only U.S. Route which crosses the EJ&E that lacks a grade separation), they will be at a level that justifies construction of a grade separation to mitigate those impacts.

Appendix A

EXHIBITS AND TABLES

Exhibits

Village of Barrington

CN Railway Traffic Impact Study Update

STUDY AREA LOCATION MAP

CIVILTECH

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EXHIBIT A-1

Village of Barrington

CN Railway Traffic Impact Study Update

ROADWAYS AND RAILWAYS MODELED IN VISSIM

CIVILTECH

EXHIBIT A-2

Tables

Table A-1
Village of Barrington CN Railway Train Survey Results
May 12, 2011 through June 15, 2011

Length of Measurement Segment	3,910 ft
A M Peak Period for Vehicles	6.30 - 8:30 A M.
P.M Peak Period for Vehicles	4 00 - 6 00 P M
Number of valid train observations collected.	211
Maintenance Trucks Observed	13
Train Stoppages Observed	6

Northbound Trains	92
Southbound Trains	119

Trains greater than 6,800 feet long observed	87 (41%)
Trains greater than 10,000 feet long observed	7 (3%)
Average train speeds less than 39 mph.	184 (87%)

Trains by Time of Day (Observed over 35 Days)

Hour Start	Number of Trains	Average Obs. Per Day	Average Speed (mph)	Average Length (ft)
12:00 AM	5	0.14	34	7,760
1.00 AM	6	0.17	30	7,767
2 00 AM	9	0 26	32	6,422
3 00 AM	11	0 31	33	7,382
4 00 AM	11	0 31	32	7,209
5 00 AM	10	0 29	32	7,800
6 00 AM	3	0.09	27	5,800
7.00 AM	5	0.14	33	6,580
8 00 AM	13	0 37	30	5,777
9 00 AM	11	0.31	32	5,209
10 00 AM	10	0.29	33	4,800
11 00 AM	10	0 29	34	3,770
12:00 PM	14	0 40	30	5,236
1 00 PM	11	0 31	34	4,245
2 00 PM	13	0 37	34	4,838
3.00 PM	8	0 23	33	5,850
4 00 PM	11	0 31	35	4,073
5 00 PM	11	0 31	30	5,191
6 00 PM	4	0 11	30	7,025
7 00 PM	9	0.26	28	7,056
8 00 PM	4	0 11	33	5,150
9.00 PM.	7	0.20.	30	6,443
10:00 PM	8	0.23	32	6,400
11.00 PM	7	0 20.	34	6,043
Total	211	6 03	32	5,800

Trains by Day of Week (Observed over 35 days)

Day	Number of Observations	Trains per Day	Average Speed (mph)	Average Length (ft)
Monday	39	8	31	5,400
Tuesday	29	6	32	5 200
Wednesday	30	6	30	5,400
Thursday	28	6	34	5,600
Friday	34	7	32	5,926
Saturday	24	5	35	7,167
Sunday	27	5	31	6,596
Total	211	6	32	5,800

From the observations, a "typical" CN train currently running through the section during this period had a length of 5,800 feet and a speed of 32 mph

There was an overall average of 6 trains per day running on the section during this period

The busiest day for train traffic was Monday, with 18.5% of the train traffic during this period, or about 8 trains throughout the day

Table A-4
City of Aurora CN Railway Train Survey Results
June 27, 2011 through June 30, 2011

Hour Start	Number of Trains	Average Obs. Per Day	Probability of Train	Average Obs. For 40 Trains	Number of Trains in Hour	Average Speed (mph)	Average Length (ft)
12:00 AM	4	1.3	6.7%	2.7	3	35	7,100
1:00 AM	3	1.0	5.0%	2.0	2	26	3,900
2:00 AM	2	0.7	3.3%	1.3	1	36	5,700
3:00 AM	3	1.0	5.0%	2.0	2	33	6,000
4:00 AM	4	1.3	6.7%	2.7	3	40	6,000
5:00 AM	3	1.0	5.0%	2.0	2	30	4,000
6:00 AM	0	0.0	0.0%	0.0	0	0	0
7:00 AM	1	0.3	1.7%	0.7	0	38	4,500
8:00 AM	1	0.3	1.7%	0.7	0	35	7,300
9:00 AM	3	1.0	5.0%	2.0	2	37	6,800
10:00 AM	1	0.3	1.7%	0.7	1	33	6,100
11:00 AM	1	0.3	1.7%	0.7	1	39	6,700
12:00 PM	4	1.3	6.7%	2.7	3	28	6,300
1:00 PM	3	1.0	5.0%	2.0	2	40	6,900
2:00 PM	1	0.3	1.7%	0.7	1	40	4,200
3:00 PM	4	1.3	6.7%	2.7	3	42	5,300
4:00 PM	2	0.7	3.3%	1.3	1	37	6,500
5:00 PM	4	1.3	6.7%	2.7	3	38	4,000
6:00 PM	3	1.0	5.0%	2.0	2	26	4,900
7:00 PM	1	0.3	1.7%	0.7	0	26	6,500
8:00 PM	6	2.0	10.0%	4.0	4	28	3,500
9:00 PM	2	0.7	3.3%	1.3	1	43	7,200
10:00 PM	3	1.0	5.0%	2.0	2	31	5,200
11:00 PM	1	0.3	1.7%	0.7	1	40	8,800
Total	60	20.0	100.0%	40	40	34	5,500

Table A-5
Projected CN Railway Train Schedule at U.S. Route 34
2015 Proposed Action Scenarios 1 and 3
(Expansion to Double Track Crossing)

No.	Arrival at Crossing	Direction	Speed (mph)	Length (Ft.)
1	12:10 AM	NB	35	7,100
2	12:25 AM	SB	35	7,100
3	12:45 AM	NB	35	7,100
4	1:20 AM	SB	26	3,900
5	1:45 AM	NB	26	3,900
6	2:35 AM	NB	36	5,700
7	3:10 AM	SB	33	6,000
8	3:45 AM	NB	33	6,000
9	4:05 AM	SB	40	6,000
10	4:30 AM	NB	40	6,000
11	4:50 AM	SB	40	6,000
12	5:15 AM	NB	30	4,000
13	5:40 AM	SB	30	4,000
14	9:05 AM	NB	37	6,800
15	9:45 AM	SB	37	6,800
16	10:25 AM	SB	33	6,100
17	11:35 AM	NB	39	6,700
18	12:10 PM	SB	28	6,300
19	12:25 PM	NB	28	6,300
20	12:45 PM	SB	28	6,300
21	1:25 PM	NB	40	6,900
22	1:50 PM	SB	40	6,900
23	2:30 PM	SB	40	4,200
24	3:05 PM	NB	42	5,300
25	3:30 PM	SB	42	5,300
26	3:45 PM	NB	42	5,300
27	4:25 PM	NB	37	6,500
28	5:00 PM	SB	38	4,000
29	5:25 PM	NB	38	4,000
30	5:50 PM	SB	38	4,000
31	6:15 PM	NB	26	4,900
32	6:40 PM	SB	26	4,900
33	8:05 PM	SB	28	3,500
34	8:15 PM	NB	28	3,500
35	8:35 PM	SB	28	3,500
36	8:45 PM	NB	28	3,500
37	9:25 PM	NB	43	7,200
38	10:15 PM	SB	31	5,200
39	10:40 PM	NB	31	5,200
40	11:30 PM	SB	40	8,800
Averages			34	5,500