

# The Value of Accommodating Longitudinal Electric Transmission in Wisconsin ROW

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Statewide Right-of-Way Permits Engineer



*Reinventing the Right of Way: Policy, Technical, and Economic Implications of Siting Transmission Lines Along Transportation Corridors – a NASEM Workshop*

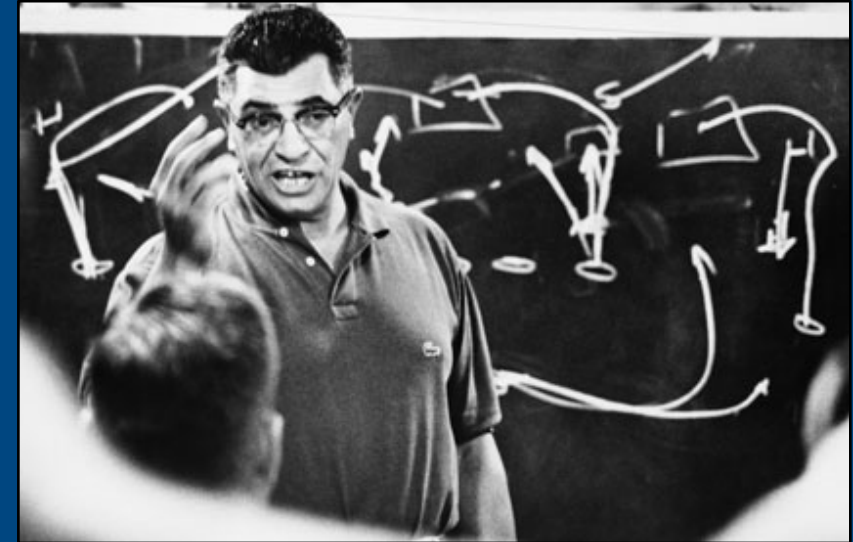
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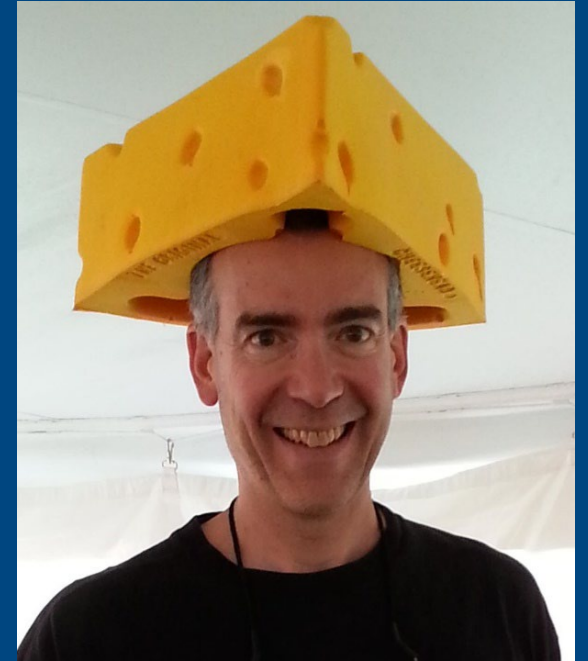
## *Today's Presentation Covers:*

- Utility Accommodation Policy (UAP) history
- Current WisDOT transmission policy
- ROW occupation and vegetation removal costs
- Construction and post-construction issues



# What about Bob?

- 34 years at WisDOT (all in Bureau of Highway Maintenance)
- Manage WisDOT's on ROW permit programs
  - Utilities, driveways, work on highway ROW
  - Policy development
  - Complex permit issuance
  - Train and advise staff
  - Handle various permitting issues
  - Electronic permitting development
  - Website development and revisions



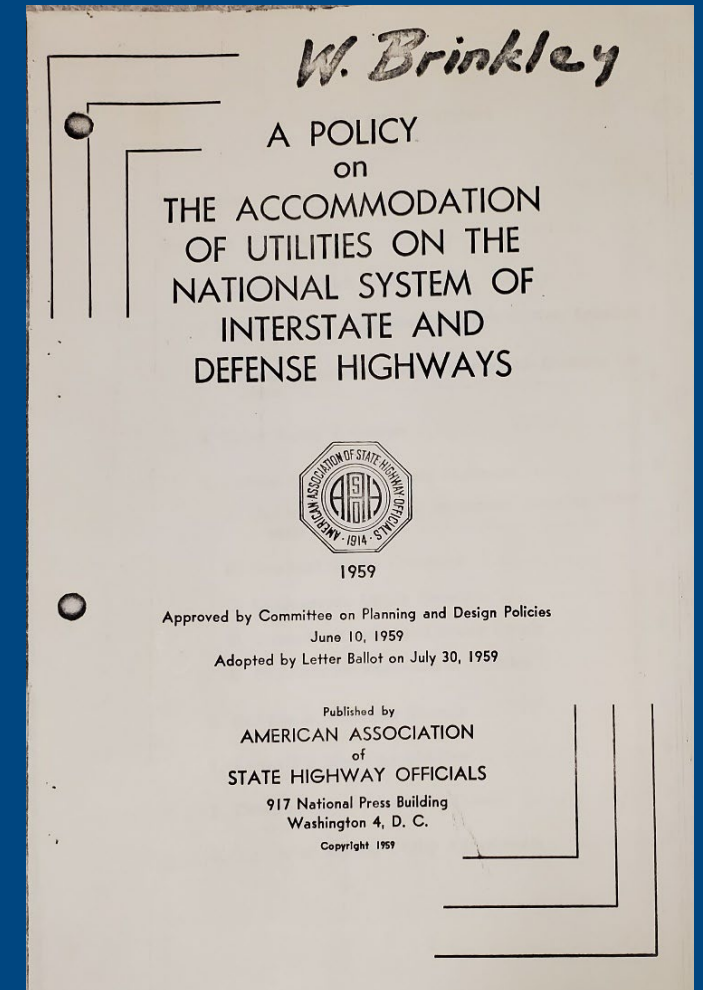
# Utility Accommodation Policy (UAP) Freeway History

- 1959-80s: WisDOT follows AASHO policy on Interstate accommodation
  - No longitudinal occupations; few exceptions

## 2. Utilities Along Interstate Highways on New Location

Where an Interstate highway is on new location, a utility will not be permitted to be installed longitudinally within the control of access lines of such highway and any utilities located outside the control of access lines cannot be serviced by access from the through-traffic roadways or ramps. Where frontage roads are provided utilities may be located along the frontage roads, outside the control of access lines, from which they can be serviced without access from the through-traffic roadways or ramps.

- Crossings are allowed



# UAP Freeway History

- 1989: WisDOT still following this policy
  - AASHO is now AASHTO
  - Crossings are still allowed
  - But the message is not as rigid
    - Longitudinal occupations may be permitted in special cases under “strictly controlled conditions”
    - Accommodation will not adversely affect highway safety, maintenance, operation, and future expansion

## A Policy On the Accommodation Of Utilities Within Freeway Right-Of-Way

Prepared by the  
AASHTO Standing Committee on Highways



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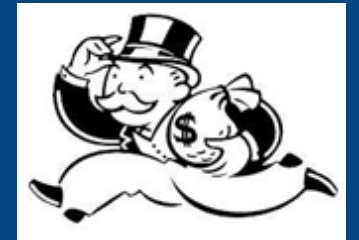
# UAP Freeway History

- 1996 Telecommunications Act signals big changes across the country
- Many companies rushing to install fiber
- Looking at interstate and freeway ROW
  - One owner (State DOT) \$\$
  - Clean corridor (of utilities) \$\$
  - WisDOT gets inquiries for using I-system



# UAP Freeway History

- How much is Interstate or freeway right-of-way **really** worth?
  - There is an inherit value in the ROW from having to deal with only one landowner (state DOT) and a clean corridor
    - Can't really determine an exact amount
    - Comes down to supply and demand
    - The ROW is only worth what a company is willing to pay for it



# UAP Freeway History

- WisDOT changes its policy; issues first permits for **fiber optics** in 1996
  - **MRC Telecommunications (now Windstream)**
    - I-39, Stevens Point to Wausau, 23.4 miles
    - I-94, Osseo to Eau Claire, 22.5 miles
  - **WisDOT Secretary Charles Thompson decides:**
    - *“We are not going to give the right-of-way away for free.”*
  - **ROW occupation fee charged as a condition of the permits**
    - \$7,000/mile for a 20-year period (\$321,475)
    - \$10,000/mile for permit renewal in 2016



Underground, so no  
clear zone issues



# UAP Freeway History

- 1999: Touch America approaches WisDOT to place fiber on the I-94 corridor from Minnesota to Illinois
  - Minneapolis to Chicago segment (Wisconsin was in the way)
  - Didn't want to pay the fee; shared resource project suggested
  - First offer, place extra conduit for WisDOT for 20-year permit
  - WisDOT counteroffer, conduit and 36 fibers for 40-year permit
- 2000-01: Over 300 miles of conduit and fiber installed
  - Relocations: WisDOT pays 11% of the costs – 36/324 fibers

# But...the only thing constant is change...

- Mid-to-late 1990s: Wisconsin under threat of brownouts and blackouts partially due to an underdeveloped transmission system
- 1999: Wisconsin state statute allows for the formation of a transmission-only utility
- 1/1/2001: ATC begins formal operations
- ATC identifies need for hundreds of millions, if not billions, of transmission line investment



# Permitting SNAFU leads to state policy change

- DNR does not issue a permit for a 345 kV project after PSC issues CPCN
- Backlash causes Governor to issue Executive Order #20







NOW THEREFORE, I, JIM DOYLE, Governor of the State of Wisconsin, by the authority vested in me by the Constitution and the laws of this state, do hereby:

Direct that the Chairperson of the Public Service Commission and the Secretary of the Department of Natural Resources explore ways to increase cooperation and coordination for the review of transmission construction projects and report on procedures to improve these processes while taking into account environmental, private property and other concerns as required under state law.

# UAP freeway policy change occurs

- Regulators, utilities, consumers, business and environmental advocates, and legislators discuss how best to implement
- 2003 Wisconsin Act 89 enacted with corridor prioritization:
  1. Existing utility corridors
  2. Highway and rail corridors.....
  3. Recreational trails (underground preferable)
  4. New corridors



Number ↕	Length (mi) <sup>[2]</sup> ↕
 39 I-39	182.14
 41 I-41	175.43
 43 I-43	191.55
 90 I-90	187.13
 94 I-94	348.23
 894 I-894	9.92

CO = Central Office: Bureau of Highway Maintenance

PSC = Public Service Commission

# Electric transmission line policy today

- Crossings allowed
  - Region offices issue permits
- CO handles coordination with PSC
  - Region office reviews to determine potential conflicts with upcoming and long-range highway projects
- Longitudinal allowed
  - CO issues permits
  - Occupation & vegetation fees charged \$\$



US 12, Madison Beltline, ATC West Middleton to Rockdale





# Highway Maintenance Manual

Bureau of Highway Maintenance

Chapter 09 Right-of-Way Use & Permits

October 2020

Section 15 Utility Accommodation

Subject 40 Controlled-Access Highways

## 1.0 Background

Controlled-access highways are separated into two categories: fully controlled or “freeways” (and “Interstates”) and partially controlled or “expressways.” See definitions 3 and 4 in [HMM 09-15-05, 2.0](#). For the purposes of this policy, a list of controlled-access highways is provided in [Table 1](#).

## 2.0 General Policy

Longitudinal utility installations on controlled-access highways are limited to communications and electric transmission facilities<sup>1</sup> only. Other types of utility facilities may be allowed to longitudinally occupy controlled-access highways in rare circumstances. See [3.0](#) for details.

A utility may be charged a fee or provide WisDOT with communications infrastructure (e.g., dark fiber), or a combination of fees and infrastructure, for the right to longitudinally locate its facilities on controlled-access highways (see [2.3](#)). Shared resource agreements may be negotiated with the utility on a case-by-case basis with a goal of providing mutual benefits to all parties involved. Under Wis. Stat. [s. 86.16\(6\)](#), WisDOT may not





## 2.3 Longitudinal Occupation Fees and Applicable Controlled-Access Highways

Under Wis. Stat. ss. [86.07\(2\)\(a\)](#) and [84.01\(31\)](#), WisDOT has authority to require fees or receive communication infrastructure in exchange for the longitudinal occupation of controlled-access highway ROW. The current rates and applicable controlled-access highways are listed in Table 1. State trunk highways (STHs) not listed in Table 1 are excluded from the fee/infrastructure requirement. The rates below also apply to private utility installations on all STHs. All rates cover a 20-year period. Occupation distance is measured along the highway centerline.

**Table 1: Longitudinal ROW Occupancy Rates on Controlled-Access Highways\***

\*Includes Interstates, freeways and expressways listed below

Broadband Infrastructure	Controlled-Access Highways		Bridge Attachments <sup>3</sup>	
	≤ 100,000 AADT <sup>1</sup>	> 100,000 AADT	Interstate	Non-Interstate
No fee on all highways and bridges	\$10,000/mile	\$12,000/mile	\$25,000	\$10,000
	Add 20% per duct per mile <sup>2</sup>		Add 20% per duct <sup>4</sup>	
Initial issuance of any permit per Wis. Stat. <a href="#">s. 86.16(6)</a>	1) AADT = Annual Average Daily Traffic ( <a href="#">counts</a> ) 2) Each duct over two		3) Costs on unique bridges are below 4) Each duct over six	

Highway	From	To	Unique Bridge Cost – Description
I-39	IL state line	WIS 29(E), Wausau	\$50,000 – All river bridges > 500 feet
I-41	IL state line	I-43, Green Bay	\$100,000 – Lake Butte des Morts
I-43	I-90, Beloit	I-41, Green Bay	\$250,000 – Frigo
I-90	IL state line	MN state line (no bridge)	\$50,000 – All river bridges > 500 feet
I-94	IL state line	MN state line (includes bridge)	\$50,000 – All river bridges > 500 feet
I-535	Superior	Duluth	\$500,000 – Blatnik
I-794	I-43/94	WIS 794	\$250,000 – Hoan
I-894	I-94/US 45 (Zoo interchange)	I-43/94 (Mitchell interchange)	
US 10	I-41	CTH J, Stockton	
US 10	I-39/USH 51	WIS 13, Marshfield	\$25,000 – Wisconsin River
US 12	CTH H	WIS 67, Elkhorn	
US 12	CTH N, Cottage Grove	WIS 188	\$25,000 – Yahara River
US 14	WIS 138, Oregon	US 12/14, Middleton (University Ave)	
US 18	US 151, Dodgeville	CTH N, Cottage Grove	
US 41	I-94	Lloyd Road, Milwaukee	
US 41	US 45	Bus 41(E), Peshtigo	
US 45	I-94/894	CTH D, West Bend	
US 51	Larson Beach Rd, McFarland	US 151, Madison (E Washington Ave)	
US 51	CTH CV, Token Creek	Grinde Road, DeForest/Windsor	
US 51	WIS 29(E), Wausau	US 8	\$25,000 – All river bridges > 500 feet
US 53	I-90, La Crosse	CTH HD, Holmen	
US 53	I-94, Eau Claire	WIS 13, Superior	\$25,000 – All river bridges > 500 feet
US 141	US 41, Green Bay	WIS 64, Pound	
US 151	IA state line (no bridge)	US 14, Madison (Park St)	
US 151	Zeier Road, Madison	WIS 23, Fond du Lac	
WIS 16	I-94, Waukesha	CTH P, Oconomowoc	
WIS 23	I-43	CTH C, Plymouth	
WIS 26	I-39, Janesville	WIS 16-60	\$25,000 – All Rock River bridges
WIS 29	I-94	I-41, Green Bay	\$25,000 – All river bridges > 500 feet

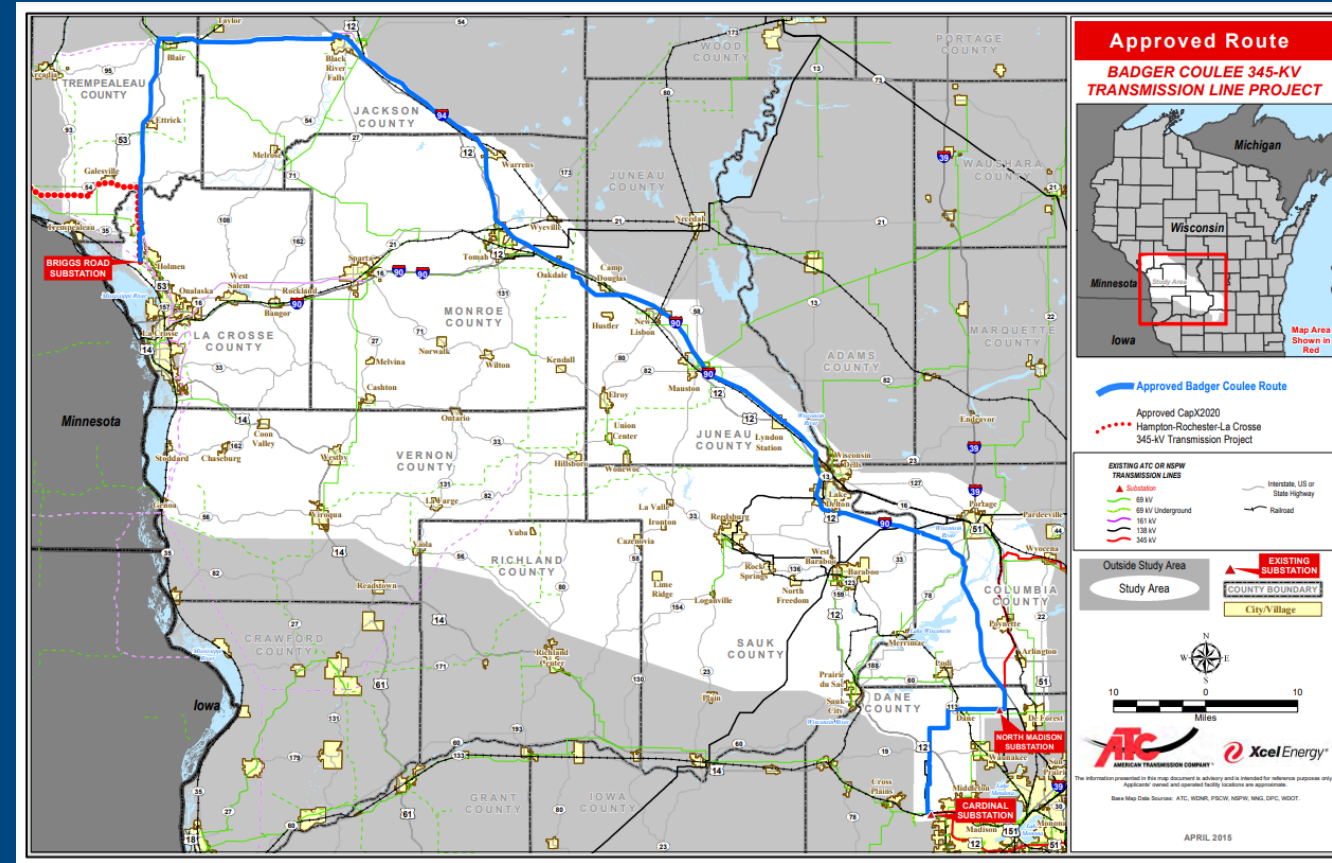
## 2.0 Tree/Vegetation Control

Compensate WisDOT \$200 for each tree  $\geq 2$ " DBH (diameter at breast height) damaged or destroyed on electric transmission line projects unless specified in a utility's permit. Compensation is **not** required for trees that are dead, diseased, dying, located in the clear zone, or an invasive species as defined in Wis. Admin. Code [Ch. NR 40](#). Upon WisDOT approval, a utility may plant prairie and/or pollinator seed mixtures in lieu of payment to restore ROW where trees have been removed provided restoration and compensation values are comparable.

# Transmission line project example

## Interstate 90-94

- ATC Badger – Coulee
  - I-90/94, Dane/Columbia County line to Black River Falls
  - 101 miles (total project length 180 miles)
  - Public involvement 2010-12
  - Construction 2016-2018
  - 9 WisDOT permits issued
    - ROW occupations fees: \$606,000
    - Vegetation fees: ~\$9,000,000 (45,000 trees)







I-90/94, ATC Badger – Coulee  
Wisconsin Dells







USH 151, ATC Cardinal – Hickory Creek  
Ridgeway



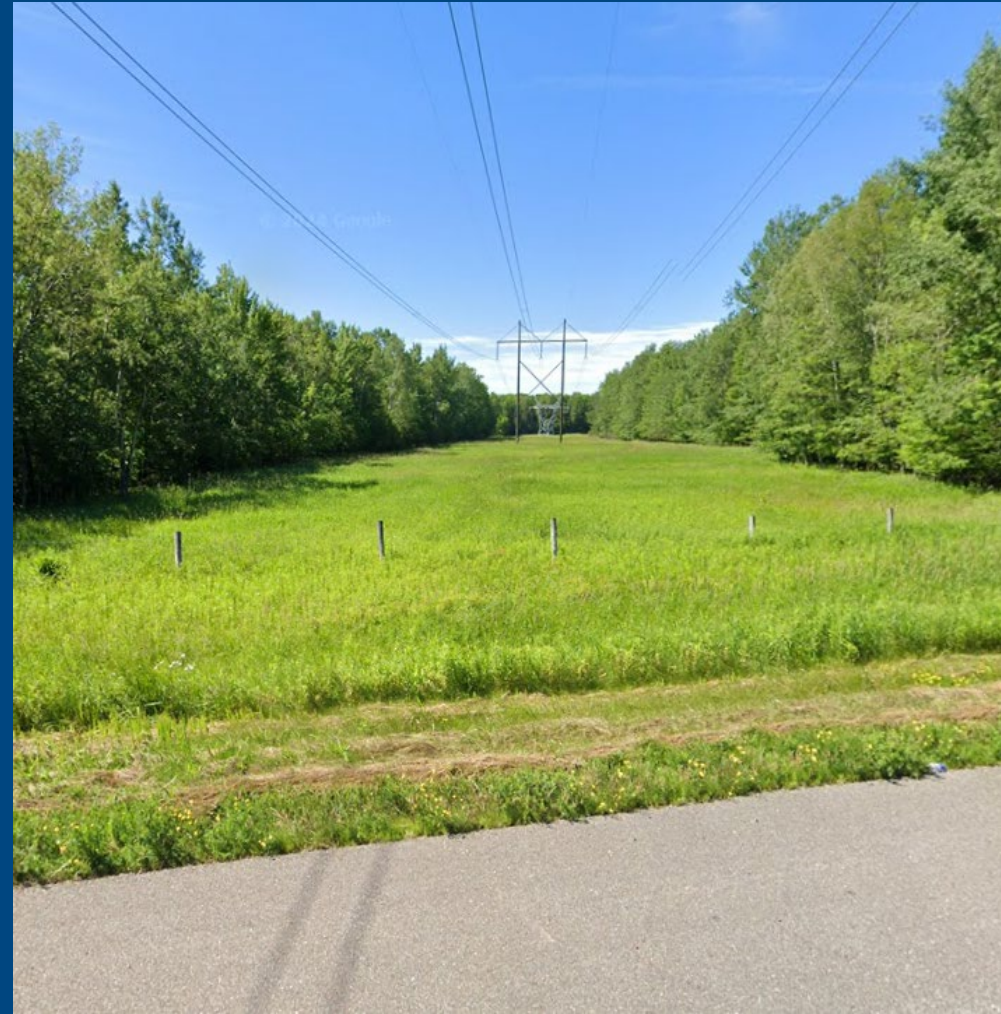








# Environmental \$\$







# Electric transmission line policy today

- Placement:

- Near edge of ROW

- If pole is in clear zone, then guardrail must be installed or extended

- Includes airspace overhang

- Blowout clearances

- 75' from bridge abutments

- Facilitate crane placement and boom swinging for girder replacement







US 12, Madison Beltline @ Fish Hatchery Rd, ATC West Middleton to Rockdale





US 12, Madison Beltline @ Fish Hatchery Rd, ATC West Middleton to Rockdale

# Construction issues: Access

- WisDOT prefers freeway access via private property or from side roads then driving along the right-of-way line
  - Dismantling security fence is allowed
- Direct highway access is also allowed when other access is not available
  - For example, wetlands or other sensitive environmental areas exist that prohibit access from adjacent property



# Security fence left open may lead to unauthorized access especially in urban areas



# Erosion control issues



- Direct access from the freeway may lead to some safety and erosion issues



# Construction issues: Distractions

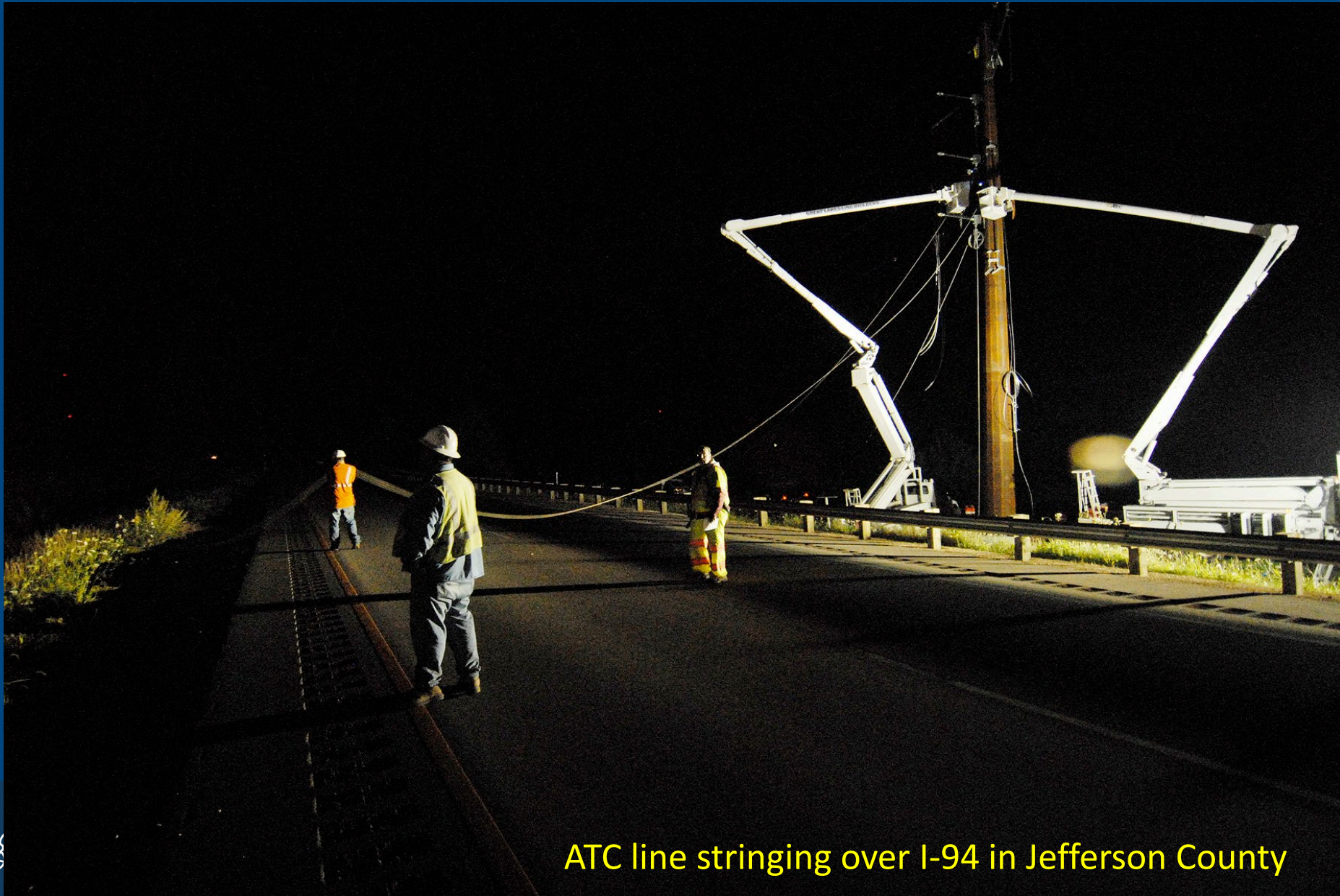




**Line stringing  
may not require  
traffic control,  
but it may be a  
distraction**



# Alternative method: Overnight road closure



ATC line stringing over I-94 in Jefferson County



# Post construction: Induced voltage issues

- Crane operator felt “tingling” during placement of bike/ped bridge over Madison Beltline
- Other reports of people getting a mild shock when touching metal crosswalk button on traffic signal directly under the line





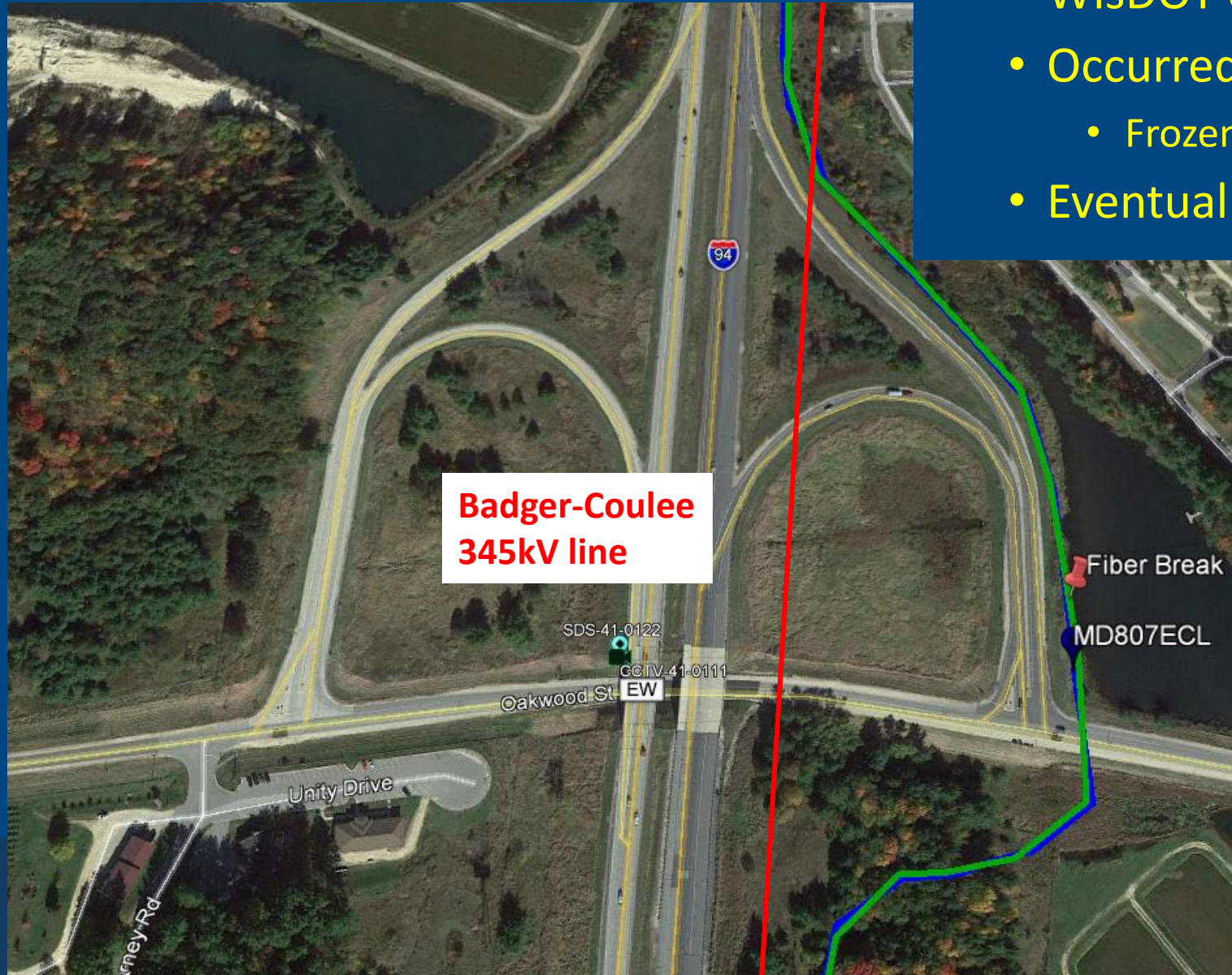






# Induced voltage issues

- Fiber optic cable damaged
  - WisDOT cable was not grounded
  - Occurred during winter prior to snow
    - Frozen ground more conductive (super dry)
  - Eventually grounded every 2,000'





# Transmission line maintenance spraying/cutting permits

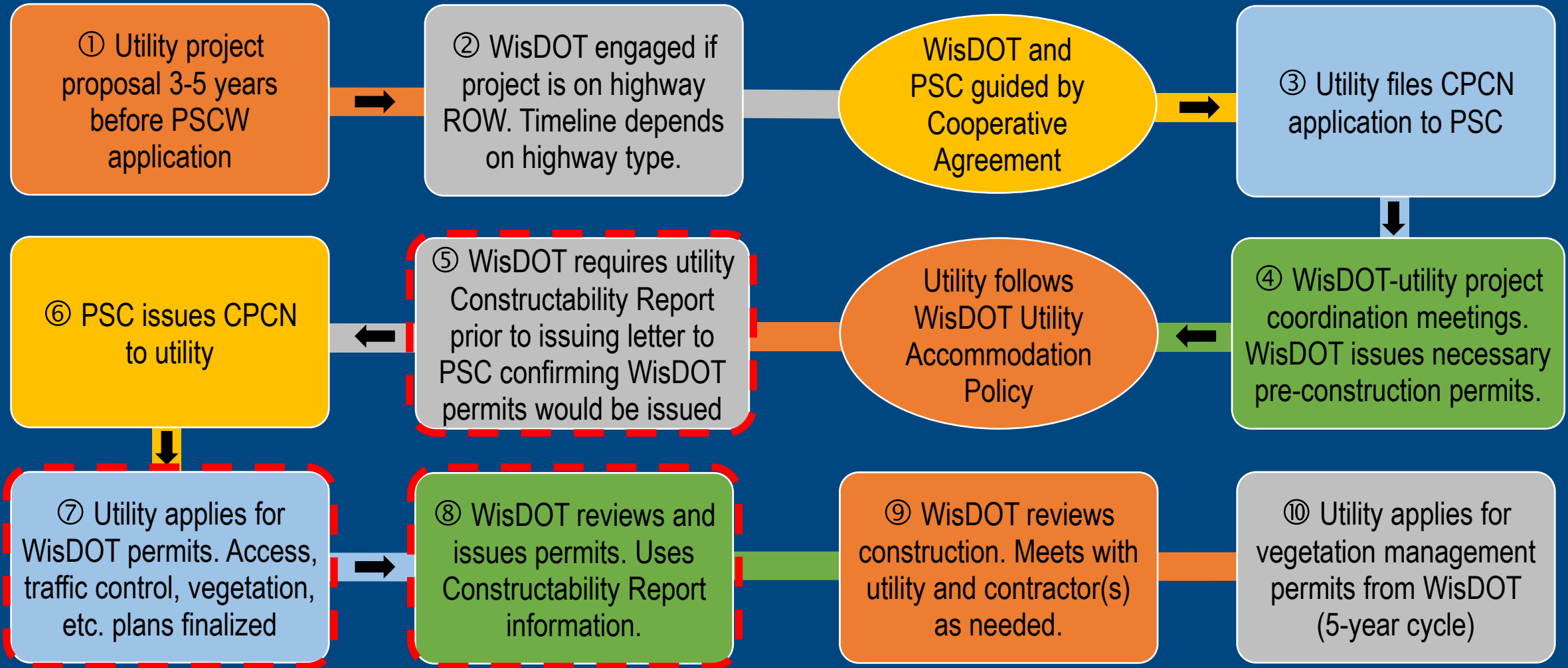
- WisDOT reviews for:
  - **Environmental**
    - Spraying near wetlands
  - **Vegetation**
    - Living snow fence impacts
  - **Ecological (habitat/species preservation)**
    - Karner Blue Butterfly
    - Rusty Patch Bumble Bee



US 14 glade mallow destruction 5/9/2007



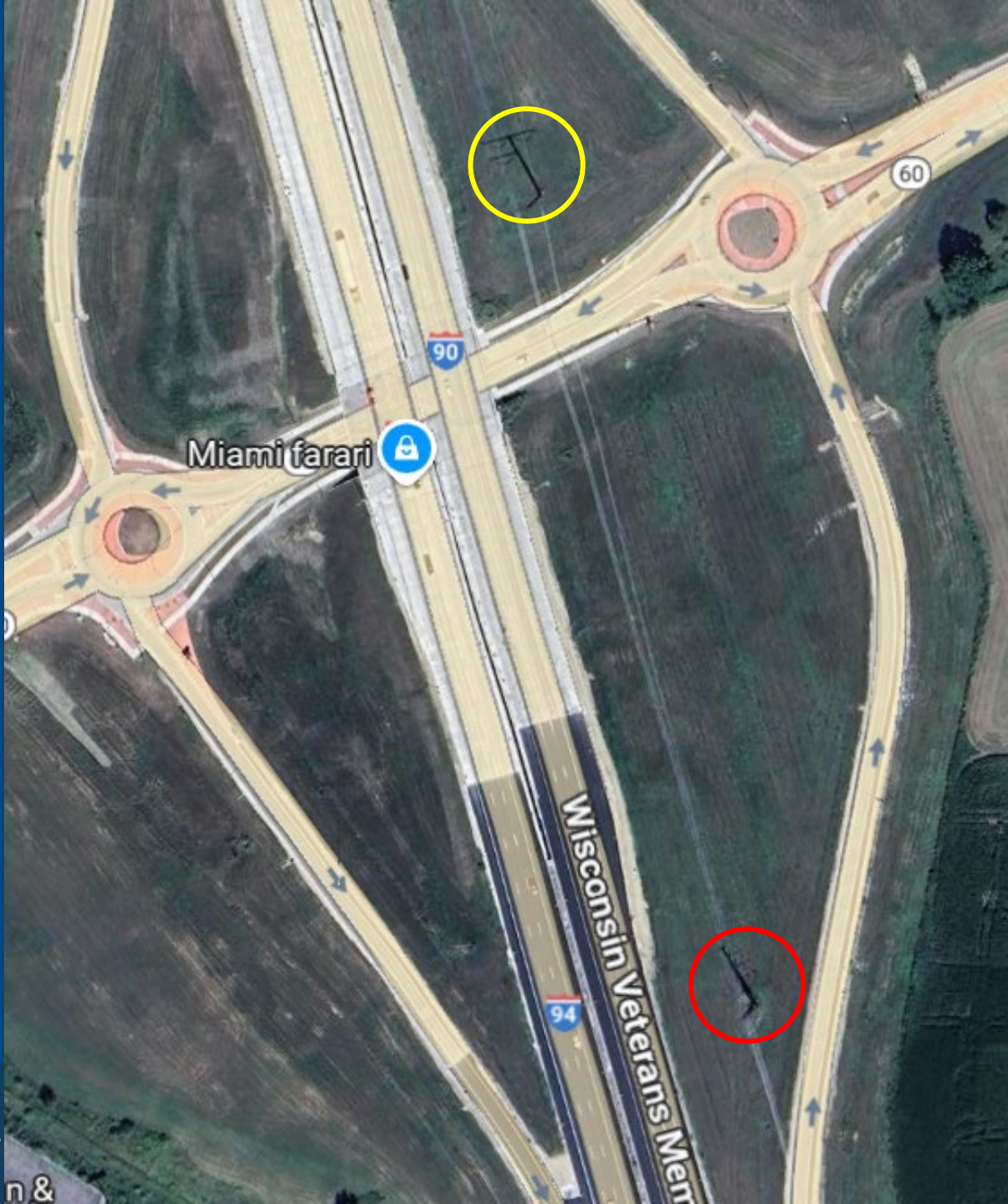
# Transmission project process with WisDOT permits







I-39,90,94 – WI 60  
Interchange, Lodi







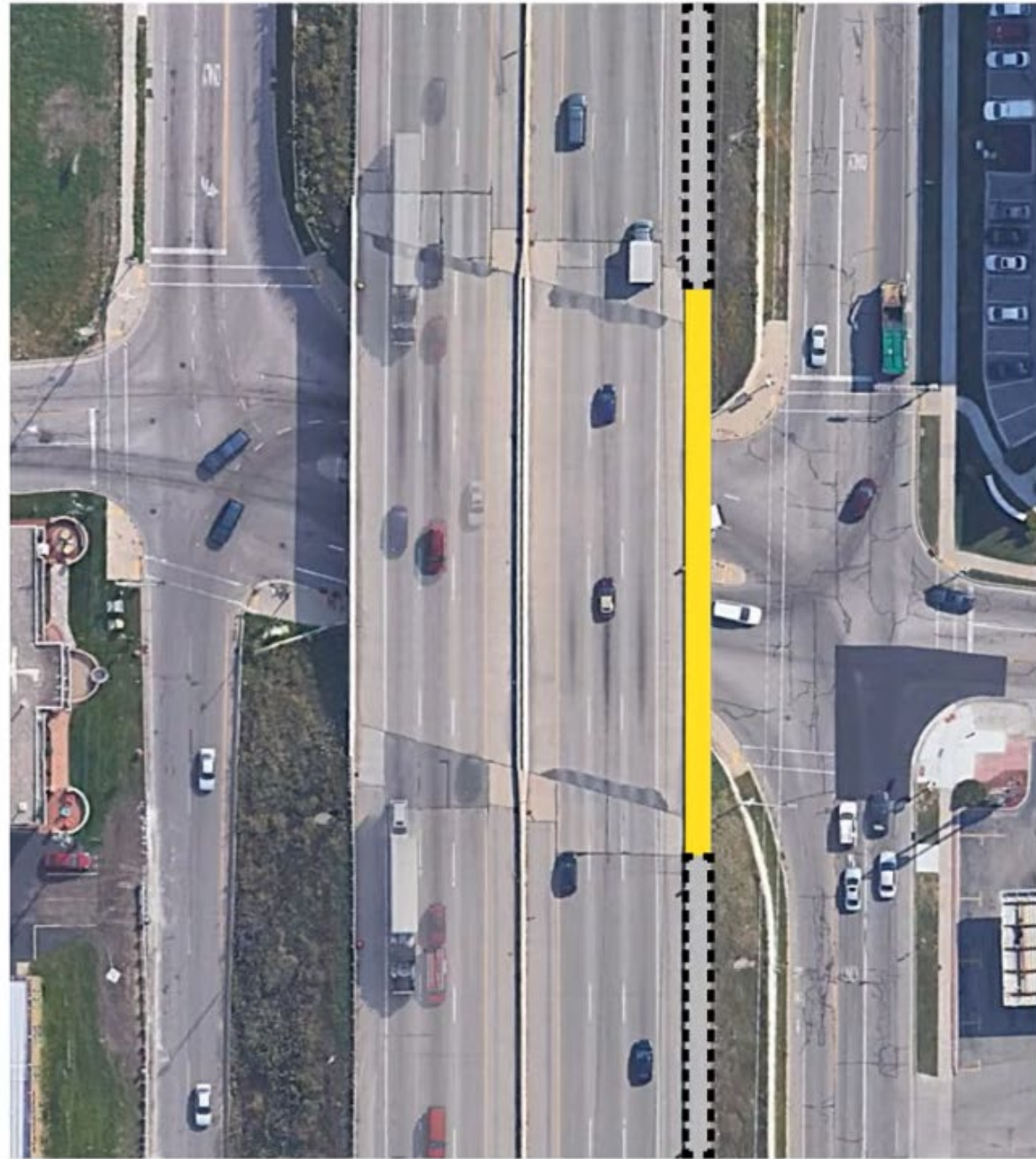
I-39, 90, 94 @ WIS 60 ATC Badger-Coulee Line







F



Bridge widening

Road widening



SURV  
RICHAR





# Electric transmission in WisDOT CAH ROW

- 27 projects
  - 7 using Interstate ROW – 200+ miles
- Longitudinal fees charged; vegetation fees charged for clearing
  - Utility pays to relocate facilities on any STH ROW
  - 0 poles needing structure relocation (so far)
- Using Interstate or other freeway corridors saves clearing a new corridor
  - May expose other homes
- Facility access during and after the project must be addressed
- Leery at first, but were able to overcome problems and issues



# For additional information

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Optimist: The glass is HALF full  
Pessimist: The glass is HALF empty  
Engineer: The glass is TWICE the  
size it needs to be