

## Hacker, Marsha

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**From:** Brian Fox [kbih518@att.net]  
**Sent:** Wednesday, February 03, 2016 8:34 AM  
**To:** Rummel, Marsha; Phillips, Robert; Hacker, Marsha; mnaboard@marquette-neighborhood.org  
**Cc:** Gary Tipler; Leslie Schroeder; John  
**Subject:** Jenifer Street Construction and Draft Resolution  
**Attachments:** 2016-01-19 Recommendations - Jenifer St Reconstruction.docx; ATT00001.txt; Draft Canopy Tree Resolution 2.2.16.pdf

To: Alder Marsha Rummel, District 6; members of the Board of Works; MNA Board

From: Brian Fox, resident of 518 S Paterson Street, Madison WI

I am responding to support the recommendations for amendment of the Jenifer Street Reconstruction Plan, presented by Mr. Gary Tipler on behalf of the Marquette Neighborhood Association. A copy of these recommendations is attached for your convenience.

I would like to call your attention to the goals stated by this document, and specifically to the items requested for inclusion in the Plan. It is notable that many of these items were considered acceptable earlier in the planning process but were not incorporated into the present Plan. These omissions need to be corrected.

I also request that the board adopt items in the Marquette Neighborhood Association recommendations that speak to improving safety, function and sustainability in the project area. Safety concerns are addressed with better management of vehicular traffic. Planning to avoid damage from vibration is certainly better than allowing damage to occur and carrying out repair later. Also, underground placement of high voltage lines can simultaneously provide solutions to neighborhood goals on aesthetics, safety, reliability and sustainability. A draft resolution on this matter has been produced by the MNA Street Trees Committee for your consideration, and is attached for your convenience.

Carrying out the proposed Jenifer Street reconstruction project should respect and enhance the character of the neighborhood for long after the construction project has been completed, not compromise or diminish it.

I understand the cost associated with underground placement of high voltage lines. Given the substantial value of canopy trees to the character and environmental quality of the neighborhood, and also given the enhanced aesthetics, safety and reliability associated with buried high-voltage lines, I support development of a shared investment by the City of Madison, MG&E and neighborhood property owners to achieve this.

Old neighborhoods maintain their interest, integrity, and value because their collective character is distinct from more modern neighborhoods. The City surely recognizes that creation of historic districts has stimulated investment, reinvigoration, and pride in place that serves us all well. The recommendations and draft resolution from the Marquette Neighborhood Association help to assure this collective character can be continued.

Therefore, I urge you to incorporate these recommendations into the approved plan.

Thank you for your service and consideration of this letter.

Sincerely,

Brian Fox

## **Jenifer Street Reconstruction Plan Recommendations**

Prepared for Marquette Neighborhood Association. Gary Tipler, Chair, MNA Traffic Committee. 1/19/2016

These are proposals for some of the more important features or aspects of a Jenifer Street reconstruction gleaned from the several public meetings and comments, based on detailed analysis and review of pertinent publications and standards. These proposals, marked in **bold**, depart from the plan proposed from City Engineering on 1/13/2016.

### **Goals**

- Enhance the utility and appearance of the existing street environment of historic buildings and canopy trees.
- Improve safety and support a balance of the multiple travel functions for Jenifer Street and the neighborhood.
- Promote a healthy and sustainable environment to support the quality of living on the street and in the neighborhood.

### **Items for Inclusion in the Jenifer Street Reconstruction Plan**

The following items are proposed by the MNA Traffic Committee to be integrated and supported in the project plans and installations in the reconstruction of Jenifer and adjacent streets in the project area. There has been strong support for partial-undergrounding to preserve trees, mixed support for narrowing by 2 feet and bump-outs, and strong support for minimization and monitoring of vibrations impacts. Based on inputs from the on-line survey and the neighborhood meetings and previous street reconstructions the following recommendations are made. 1.

#### **Pedestrian, Cyclist and Vehicular Traffic Safety**

- 1. Pedestrian crosswalk extensions or bump-outs should be 5 feet, rather than 3 feet.**
- 2. Support a “speed hump” just east of the west-bound bus stop east of Livingston Street.**
  - This will help mitigate the problem of poor visibility of both east-bound vehicular traffic turning from Livingston and west-bound traffic on Jenifer. This has been a dangerous intersection and too many near accidents have occurred. Placing it prior to a bus stop permits a bus slowing to pick up passengers at this frequently used stop.
- 3. Support the installation of a “traffic table” at the intersection of Brearly and Jenifer.**
  - This enhances pedestrian safety at this very heavily used intersection that serves the Wil-Mar Neighborhood Center, a playground, farmers markets and bus stops.
- 4. Support narrowing Jenifer Street by 2 feet.**
  - This can improve safety by decreasing the distance pedestrians have to cross the street, and by ‘calming’ or slightly slowing through-traffic by encouraging more mindful driving. It would design the street relative to its residential setting and use, rather than for a maximum speed for vehicular use. This was originally supported in the Engineering proposal and in the Urban Assets Report.

In addition:

- This will increase soil areas to enhance tree health.
- It will increase the soil area for storm water storage and for snow storage.
- It will decrease the street paving surface area and the cost relative to its area.

### Bus Service

#### **5. Support an alternative to rerouting the bus service to East Washington Avenue for the project.**

- East Washington Avenue is far too distant for the heavy bus ridership in the neighborhood.
- The walk through the former industrial and rail area has few “eyes on the street” and has proven to be unsafe, particularly for women after dark.

There are two alternatives that the Traffic Committee proposes:

- A. Provide a shuttle service for the neighborhood to provide service around the Capitol Square to make connections to other lines. Or,
- B. Provide service of existing lines on Williamson Street, with limited designated stops -- three are suggested. The neighborhood will work with business owners to secure approval for the temporary stops.

### Vibration Damage to Houses

#### **6. Take measures to limit construction machinery vibrations that damages historic buildings.**

Prevent damage rather than simply plan for remediation afterward. There is no evidence that post-construction remediation has worked. Adequately determine and prevent damage to buildings from construction machinery vibration.

- A. The City should specify preventative vibration damage controls in bid specifications and performance criteria in a request for proposals and in bid contracts and comply with standards provided in the specifications that are proven effective at preventing damage. (See notes below.)
- B. Bid documents should require that contractors have a record of quality experience working with care around historic buildings. Contractors should additionally be made aware of soil and geologic formations so as to adequately prevent damage to buildings.
- C. Crack-and-damage surveys should be carried out by a contractor independent of the construction contractors and the survey must be shared with the building owners before and after the surveys are done.

### Retain Trees

**7. Retain and preserve existing ash trees that are in good health. Halt preemptive removal of the ones in good health and good form, and develop a plan to treat them and protect them against construction damage. A partnership with MNA and property owners could be developed to pay the two-year inoculation costs.**

- At least 16 ash trees that are in good health and form are proposed to be removed simply because they are beneath high voltage power lines. In addition, some other ash trees in good health and good form and not beneath high voltage power lines are also proposed to be removed to make construction less complicated and avert removing them, perhaps years from now.
- These trees provide energy savings via reduction in cooling and heating costs, increase air filtration, reduce storm water run-off, create habitat, and reduce noise and wind impacts. They improve livability in the neighborhood and enhance property values. They are an intrinsic part of the street and life of the neighborhood.
- These trees were considered to be able to be retained by Forestry in the plan proposed last year.

### **Retain Tree Canopy - Undergrounding High Voltage Wires**

#### **8. Support Partial Undergrounding of High Voltage Wires. Develop a plan to incorporate the costs into the plan that may be shared by the City, MG&E and the property owners.**

- This permits the retention and planting of full sized canopy trees. They provide energy savings via reduction in cooling and heating costs, increase air filtration, reduce storm water run-off, creates habitat, and reduce noise and wind impacts. Retain livability and property values.
- This would result in reduced maintenance, equipment needs and personnel safety issues for exposed high voltage wires that would otherwise remain in place.

#### **Notes:**

For more information on some of these topics, please review the links to other MNA Traffic Committee reports, Engineering plans, the MNA-commissioned Urban Assets Report, and other sources of information that can be found on the MNA webpage:

<http://marquette-neighborhood.org/jenny-street-reconstruction/>

#### **Vibration**

City Engineering said that there will be vibrational compaction from the specific machines associated with damage: vibratory rollers and compactors.

This reputable data from the State of New Hampshire provided enlightening information:

##### **Vibratory rollers**

PPV = .059 at 82 feet.

**Damage not expected for a medium to heavy roller at least 40 feet away from the building.**

Predicted PPV: .45 (25 feet); .210 (50 ft); .133 (75 ft); .098 (100 ft)

##### **Compactor**

PPV = .787 at 16 feet, .0787 at 50 feet, <.0118 at 98 feet.

Ground Vibrations Emanating from Construction Equipment, New Hampshire Department of Transportation (2012), pages 45-46

In- ground conditions affect vibration. Jenifer Street sits atop soils over a rock bluff, sometimes found in basements. "Soil and subsurface conditions are known to have a strong influence on the levels of ground-borne vibration. Among the most important factors are the stiffness and internal damping of the soil and the depth to bedrock. Experience with ground-borne vibration is that vibration propagation is more efficient in stiff clay soils, and shallow rock seems to concentrate the vibration energy close to the surface and can result in ground-borne vibration problems at large distances"

[http://www.hmmh.com/cmsdocuments/FTA\\_Ch\\_07.pdf](http://www.hmmh.com/cmsdocuments/FTA_Ch_07.pdf)

One easy reference for statistics:

Table 2-5. Swiss Standard for Vibration in Buildings (SN 640 312, Swiss Association for Standardization, 1978).

Building Class	Vibration Source	Frequency Range, Hz	PPV, in./sec
I	Machines, traffic	10-30	0.5
		30-60	0.5-0.7
	Blasting	10-60	1.2
		60-90	1.2-1.6
II	Machines, traffic	10-30	0.3
		30-60	0.3-0.5
	Blasting	10-60	0.7
		60-90	0.1-1.0
III	Machines, traffic	10-30	0.2
		30-60	0.2-0.3
	Blasting	10-60	0.54
		60-90	0.5-0.7
IV	Machines, traffic	10-30	0.12
		30-60	0.12-0.2
	Blasting	10-60	0.3
		60-90	0.3-0.5
I – Buildings of steel or reinforced concrete, such as factories, retaining walls, bridges, steel towers, open channels, underground chambers and tunnels with and without concrete lining II – Foundation walls and floors in concrete, walls in concrete or masonry, stone masonry retaining walls, underground chambers and tunnels with masonry linings, conduits in loose material. III – Buildings as previously mentioned but with wooden ceilings and walls in masonry IV – Construction very sensitive to vibration, objects of historical interest			

**2/2/16. DRAFT RESOLUTION: Cost-Sharing and Benefit Analysis for Undergrounding High Voltage Line in Jenifer Street Reconstruction Area.**

*This resolution is forwarded as a draft from the MNA Street Trees Committee to create a benefits analysis of canopy street trees and establish a shared cost plan to underground high voltage power lines (also known as “partial undergrounding”) in the Jenifer Street reconstruction area.*

**INTRODUCTION**

Of the many places which have brought the city of Madison national acclaim one is the historic and iconic area of Jenifer Street which was given a Great Places in America Neighborhood award from the American Planning Association in 2013. This area is in a locally recognized historic district, as well being listed as a nationally landmarked district.

A section of this area is slated to undergo a full street reconstruction in 2016 to address aging sewer infrastructure. As part of the current planning for the street reconstruction project this area is anticipating a radical loss of tree canopy from preemptive removal of large ash trees and exclusive replanting of low-growing shrub trees where above ground high voltage power lines are present, resulting in an eventual permanent loss of as much as half of the existing canopy street trees.

Due to the dense urban character of this area, coupled with extremely modest building set-back (resulting in lack of front yards) and zoning requirements that parking to be located in the back of the lots (resulting in lack of back yards) the myriad benefits of the street trees will be unable to be compensated for on private property.

The cost-sharing proposal is to divide the estimated \$197,300 to underground the high voltage power lines in the Jenifer Street reconstruction area among the three groups of stakeholders: the city, MG&E, and adjacent property owners, in order to facilitate the safe continued growth of mature canopy street trees.

**A. CITY OF MADISON**

WHEREAS the section of Jenifer Street scheduled for reconstruction accepts its current role as transit corridor for five bus routes, carrying over 300 buses per day, and experiences the resultant noise, pollution, and degradation of community connectedness;

WHEREAS mature canopy trees have a mitigating role for all of the impacts of being a transit corridor from significant reduction in road-noise (1) removal of air pollutants (2) and creation of a sense of place (3);

WHEREAS the City of Madison Sustainability Plan with an aim of restoring and maintaining habitat calls for expanding and replacing canopy trees whenever possible, and directs creating a policy to underground power lines to achieve this (4);

WHEREAS an asphalt road surface undergoes a less severe degradation from UV rays and heat from the sun when shielded by canopy trees (5), resulting in cost savings from less frequent repair and resurfacing needs;

WHEREAS the City of Madison is or has undergone projects from numerous angles to reduce the flow of water during storm events (6) and whereas a single mature canopy tree can store 100 gallons or more of water (7) which is then evaporated out of their leaves, relieving the storm sewer of the water entirely (8);

NOW THEREFORE BE IT RESOLVED The City of Madison will fund 25% of the cost of undergrounding the high voltage power lines in the Jenifer Street reconstruction area in order to preserve the existing canopy trees and replace these as necessary with new canopy trees.

**B. MG&E**

WHEREAS Madison Gas and Electric, having recently undergone a community planning effort, cited as a cost-saving priority the avoidance of the need to further increase peak generation load capacity (9) and whereas MG&E has identified the use of air conditioning as the single primary driver of peak load (10) and whereas a single mature canopy tree can reduce an individual home’s electric cooling use by as much as 20% (11) (12);

WHEREAS urban areas are projected to continue to undergo an increase in yearly high temperatures due to rising levels of carbon dioxide (13) and whereas a single mature canopy trees can absorb 48 pounds of CO2 per year (14) and thereby reduce the urban heat island effect and prevent an increase in peak energy demand (15);

WHEREAS MG&E can experience a significant increase in electric reliability from undergrounding 15kV distribution wires due to avoidance of storm damage from wind and ice-loading (16);

NOW THEREFORE BE IT RESOLVED Madison Gas and Electric will fund 50% of the cost of undergrounding the high voltage power lines in the Jenifer Street reconstruction area in order to preserve the existing canopy trees and replace these as necessary with canopy trees.

**C. JENIFER STREET AREA RESIDENTS**

WHEREAS a single mature canopy street tree increases a home’s value 3%, or \$7,593 of a \$293,000 home (17) as well as adds value to homes within 100 feet of that single tree (17);

WHEREAS the presence specifically of mature canopy street trees has been shown to reduce crime. (18) (19);

WHEREAS the presence of trees has been shown to have such health benefits as reducing stress and increasing overall measures of wellbeing and life satisfaction (20) and as evidenced by communities already subject to the radical loss of trees due to the Emerald Ash Borer, the presence of trees protect against cardiovascular and lower-respiratory-tract illness (21);

NOW THEREFORE BE IT RESOLVED the property owners in the Jenifer Street reconstruction area through an equitable scheme of cost division similar to that used in calculating street reconstruction costs be structured to divide amongst property owners fund 25% of the cost of undergrounding the high voltage power lines in the Jenifer Street reconstruction area in order to preserve the existing canopy trees and replace these as necessary with canopy trees.

## CITATIONS

1. Road traffic noise reduction by vegetation in the ring road of a big city Th. Samara1 and Th. Tsitsoni <http://users.auth.gr/tsitsoni/files/gr/10.pdf>
2. THE EFFECTS OF URBAN TREES ON AIR QUALITY, David J. Nowak USDA Forest Service, Syracuse, NY 2002 [http://www.nrs.fs.fed.us/units/urban/local-resources/downloads/Tree\\_Air\\_Qual.pdf](http://www.nrs.fs.fed.us/units/urban/local-resources/downloads/Tree_Air_Qual.pdf)
3. Urban Forests Can Increase Cultural Identity and Sense of Place in a Community <http://articles.extension.org/pages/67804/urban-forests-can-increase-cultural-identity-and-sense-of-place-in-a-community>
4. Madison Sustainability Plan – Fostering Environmental, Economic and Social Resilience. City of Madison, 2011. <http://www.cityofmadison.com/sustainability/documents/sustainplan2011.pdf> <http://www.cityofmadison.com/sustainability/documents/sustainplan2011.pdf> goal 7: Restore and Maintain Natural Habitat (pp. 16 and 17) Preserve and expand urban forest resource  
Action item #8 Minimize loss of tree cover and green space in public rights of way  
Action item #9 Promote, expand and replace tree canopy trees whenever possible and encourage landowner collaboration on strengthening tree canopy and woodlands  
Action item #10 Create a policy to facilitate underground placement of power lines and overhead wires
5. EFFECTS OF STREET TREE SHADE ON ASPHALT CONCRETE PAVEMENT PERFORMANCE. [http://www.fs.fed.us/psw/publications/mcpherson/psw\\_2005\\_mcpherson001\\_joa\\_1105.pdf](http://www.fs.fed.us/psw/publications/mcpherson/psw_2005_mcpherson001_joa_1105.pdf)
6. <http://www.cityofmadison.com/engineering/stormwater/>
7. How Trees Can Retain Stormwater Runoff [http://www.fs.fed.us/psw/programs/uesd/uep/products/11/800TreeCityUSABulletin\\_55.pdf](http://www.fs.fed.us/psw/programs/uesd/uep/products/11/800TreeCityUSABulletin_55.pdf)
8. <http://water.usgs.gov/edu/watercycleevapotranspiration.html>
9. Energy 2030 Framework <https://www.mge.com/community-conversations/framework.htm> “Reducing electric system peak will help us build and maintain an electric system that is only as big as we need to meet customer load and reduce the generating and distribution capacity that is needed only for times of peak use.”
10. “Central air conditioners account for more electricity use during high-demand periods than any other appliance.” Madison Gas & Electric. <https://www.mge.com/customer-service/home/power-control.htm>
11. Energy Saving Trees. <http://energysavingtrees.arborday.org/#About> “When planted properly, a single tree can save a homeowner up to 20% on energy costs.”
12. Energy-saving trees: Reducing Residential Energy Demand through Trees April 2013 <http://mpaenvironment.ei.columbia.edu/files/2014/06/Energy-Saving-Trees.pdf> page 21 “Alliant Energy A Midwest utility that serves customers in Iowa, Wisconsin, and Minnesota Operation ReLeaf offers residential utility customers in Iowa trees at highly discounted prices. Funded by Alliant Energy, ReLeaf is administered by the Iowa Department of Natural Resources Bureau of Forestry, the conservation boards of host counties,20 and uses iTree software. The trees are projected to help reduce cooling costs by up to 25%.”
13. [http://www.nrs.fs.fed.us/niacs/carbon/forests/carbon\\_sequestration/](http://www.nrs.fs.fed.us/niacs/carbon/forests/carbon_sequestration/)

14. <http://urbanforestrynetwork.org/benefits/air%20quality.htm> “Trees reach their most productive stage of carbon storage at about 10 years at which point they are estimated to absorb 48 pounds of CO<sub>2</sub> per year.”
15. EPA Heat Island Cooling Strategies <http://www.epa.gov/heat-islands/heat-island-cooling-strategies>
16. Underground vs. Overhead Transmission and Distribution  
<http://www.puc.state.nh.us/%5C2008IceStorm/ST&E%20Presentations/NEI%20Underground%20Presentation%2006-09-09.pdf> page14 “An improvement of up to 10 times is possible when lines are placed underground.”
17. [http://www.fs.fed.us/pnw/research/gcra/pdfs/pnw\\_2008\\_donovan001.pdf](http://www.fs.fed.us/pnw/research/gcra/pdfs/pnw_2008_donovan001.pdf)
18. The Effect of Trees on Crime in Portland, Oregon. Geoffery H. Donovan, Jeffery P. Prestemon  
<http://eab.sagepub.com/content/44/1/3>
19. The relationship between tree canopy and crime rates across an urban-rural gradient in the greater Baltimore region, Austin Troya, J. Morgan Grove , Jarlath O’Neil-Dunnea  
[http://www.nrs.fs.fed.us/pubs/jrnl/2012/nrs\\_2012\\_troy\\_001.pdf](http://www.nrs.fs.fed.us/pubs/jrnl/2012/nrs_2012_troy_001.pdf)
20. Would You Be Happier Living in a Greener Urban Area? A Fixed-Effects Analysis of Panel Data, Mathew P. White, Ian Alcock, Benedict W. Wheeler and Michael H. Depledge, Psychological Science, published online 23 April 2013, DOI: 10.1177/0956797612464659  
<http://www.ecehh.org/research-projects/urban-green-space/>
21. The Relationship Between Trees and Human Health: Evidence from the Spread of the Emerald Ash Borer  
[http://www.ajpmonline.org/article/S0749-3797\(12\)00804-5/fulltext](http://www.ajpmonline.org/article/S0749-3797(12)00804-5/fulltext) “Results suggest that loss of trees to the emerald ash borer increased mortality related to cardiovascular and lower-respiratory-tract illness. This adds to the growing evidence that the natural environment provides major public health benefits.”

### **Additional Documentation and Planning Resources**

iTree, a state-of-the-art, peer-reviewed software suite from the USDA Forest Service that provides urban forestry analysis and benefits assessment tools. <https://www.itreetools.org/>

Urban Street Trees 22 Benefits Specific Applications Dan Burden, Senior Urban Designer  
[https://www.michigan.gov/documents/dnr/22\\_benefits\\_208084\\_7.pdf](https://www.michigan.gov/documents/dnr/22_benefits_208084_7.pdf)

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<http://www.sustainablecitiesinstitute.org/topics/water-and-green-infrastructure/urban-forestry>

Forestry Commission of England, The Case for Trees in Development and the Urban Environment  
[http://www.forestry.gov.uk/pdf/eng-casefortrees.pdf/\\$FILE/eng-casefortrees.pdf](http://www.forestry.gov.uk/pdf/eng-casefortrees.pdf/$FILE/eng-casefortrees.pdf)

Energy Conservation Through Trees [http://actrees.org/files/Resources/factsheet\\_energy.pdf](http://actrees.org/files/Resources/factsheet_energy.pdf)

What is a tree worth? Jill Jonnes Wilson Quarterly, 2011 <http://wilsonquarterly.com/quarterly/winter-2011-the-seven-million/what-is-a-tree-worth/>