



Application for Exemption from Site Plan Review

Portland, Maine

Department of Planning and Urban Development, Planning Division and Planning Board

144 Commercial St.

PROJECT NAME: DeMillo's Floating Restaurant & Marina

PROJECT ADDRESS: 25 Long Wharf Portland, Maine 04101

PROJECT DESCRIPTION: (Please Attach Sketch/Plan of Proposal/Development)

To install an Auxiliary Generator @ DeMillo's to supplement the energy supply to the Marina RECEIVED

CHART/BLOCK/LOT: 30-H-001

NOV 17 2009

CONTACT INFORMATION:

OWNER/APPLICANT

Name: STEVE DeMillo
Address: 25 Long Wharf Portland, Me
Zip Code: 04101
Work #: 772-2216
Cell #: _____
Fax #: 772-1081
Home #: _____
E-mail: steve@dimillos.com

CONSULTANT/AGENT

City of Portland
Planning Division

Name: MARK J. HELLON
Address: 212 CANCO ROAD Portland, Me
Zip Code: 04103
Work #: 775-5661 Ext. 237
Cell #: 831-6051
Fax #: 775-4303
Home #: 879-0006
E-mail: markh@nelsonsmall.com

Criteria for Exemptions:
(See Section 14-523 (4) on page 2 of this application)

- a) Is the proposal within existing structures?
- b) Are there any new buildings, additions, or demolitions?
- c) Is the footprint increase less than 500 sq. ft.?
- d) Are there any new curb cuts, driveways or parking areas?
- e) Are the curbs and sidewalks in sound condition?
- f) Do the curbs and sidewalks comply with ADA?
- g) Is there any additional parking?
- h) Is there an increase in traffic?
- i) Are there any known stormwater problems?
- j) Does sufficient property screening exist?
- k) Are there adequate utilities?

Applicant's Assessment
Y(yes), N(no), N/A

Planning Division
Use Only

NO	NO
NO	NO
Yes	Yes
NO	NO
Yes NA	Yes N/A
NA	N/A
NO	NO
NO	NO
NO	NO
NA	N/A
Yes	Yes.

69900044 23 Long Wharf.

Planning Division Use Only

Exemption Granted Partial Exemption Exemption Denied

Exemption granted subject to 2 conditions:

1. That the routing specifications shall be submitted for review and approval prior to the issuance of a Building Permit; and
2. That all required Building Permits shall be obtained prior to installation.

Planner's Signature

Jan Fraser

Date 01-29-2010

[This cross-ref to Building Permit # 09-1279 Nov 2009 144 Comm St]

Planning Barbara Barhydt

[Note; This is tied in with the Building Permit #09-1279 144 Commercial Street]

Jean Fraser has reviewed this project to ensure that the review reflects the developing Wind Ordinance.

12.10.2009: JF spoke to the applicant's agent Mark Hellen of Nelson and Small (Technical Consultant) 775-5661 Ext 237 and he confirmed:

- a. The site already has fencing on the 2 water sides (high chain link for one segment and a lower tubular steel for the other – visible in photos) and they would fence the other 2 sides with 6 ft high black vinyl-coated chain link fence if we would like it to be fenced. This would not be within 5 ft of the water as its on the inland side.
- b. Instead/in addition he can add a 5 ft extender to the pole so that the height before reaching the moving spinner is increased from 9'1" to 14'.
- c. He confirmed that if someone put their hands into the vertical spinning mechanism that they would probably break their hand.
- d. Also he confirmed that for the City's Building Inspector they are getting a PE to review and stamp the plans etc.
- e. Re shadow flicker/ice shedding, he doesn't think these are issues but will check (and get back to me) with the company as they have piloted these in Colorado (where is snow/ice).
- f. They will do whatever we feel is appropriate as they want this installation to give a positive "message" about wind energy; they are likely to wait until Spring to install so to allow all the necessary discussions to take place with us as they want everyone "happy".
- g. He is confident of the wind resource at DiMillo's (he knows Steve DiMillo and had suggested this); thinks the *Windspire* will work well as only needs 4mph; he anticipates that these will initially be most popular with small commercial uses and be located in parking lots (a 3kW version is soon to be available).

12.15.2009: After discussing with senior colleagues, the following e-mail sent:

Mark,

Further to our conversation last week, I write to confirm that we would like some additional/revised plans submitted that include the additional items that we discussed.

Our main concern is public safety since the location of the Windspire is immediately adjacent the main entrance to DiMillos and also easily accessible by pedestrians via the parking area on Commercial Street. Virtually all other wind energy ordinances I have reviewed (and the one I am drafting for Portland) include requirements for non-climbable poles, clearances for moving parts, and security and we consider that following would be appropriate at this location to address safety issues:

1. 5-6 ft high tubular railings (similar to the blue painted ones that are there but higher) around the generator base and securely attached to the existing railing and chain link fencing on the waterside to prevent unauthorized access to the generator base;

2. Add a 5 foot extender to the pole so that the moving parts of the wind generator are at least 12 ft above the "ground" (eg existing asphalt level).

Please send me more detailed plans (this can be by pdf in an e-mail) showing the actual proposed location of the base/pole, the fencing (clarifying the spec) and the revised elevation showing the revised pole and height.

Once we receive these details we can quickly continue processing the Exemption Request.

1.28.2010 Final Planner Comments on further information received 1.27.2010:

I have reviewed the further information and although somewhat "rough" (particularly regarding the design of the railings) I suggest the revised proposals should be granted an exemption for the following reasons:

- Our requirements (linked to information obtained during research on the Wind Ordinance) included raising the height of the support pole by 5 ft, which brings the overall height to 35 feet (still well within the zoning height limit of 45 ft), and results in the moving parts of the generator being 14+ feet from the surrounding grade. The support is an unclimbable steel pole.
- Setbacks: it does meet the zoning requirement of 5 ft from the edge of the pier. There are no current standards for a wind generator.
- Noise: the noise tests I have looked at seem to indicate that the source noise is around 45dBA for this *Windspire*. The Waterfront Zone has 75dBA as the maximum so this is acceptable.
- The proposal has been located as close as possible to the existing building so that is distant from public ways. The fact it impinges on an adopted view corridor was agreed with Associate Corporation Counsel as irrelevant as this proposal does not meet the definition of a minor site plan and therefore site plan standards per se do not apply.
- The revised sketch plan includes "5-6 ft high tubular railings similar to existing" and indicates where they will be located around the base. While no details of the fencing or its connections to existing fencing are included (I had asked for clarification of the spec), I suggest that we grant the exemption subject to a condition that requires submission of the railing specifications for review and approval.
- I have discussed the proposal with both Jeanie Bourke and Bill Needleman and both agree it's a good site for a "test" case of the *Windspire*, since it's a well-proven system (the manufacturing company have just installed their 400th) which is likely to be the subject of future site plan/ZBA/building permit applications in Portland. Bill confirms that the waterfront is a noisy and visually chaotic area in any case and as it offers "good" wind it's a good location for a wind system (he supports ones that are even higher).
- As the wind generator raise some particular potential engineering issues (such as vibration, ice throw, lightning strikes) I have drawn these to the attention of Inspections so that the Building Code reviewer can investigate and review accordingly. Barbara Barhydt suggests that a condition should be included that they obtain the required building permits.

01.29.2010: Final Planning Division Decision (agreed with Barbara Barhydt):

Grant the exemption subject to:

- a condition that requires submission of the railing specifications for review and approval (?prior to issuance of building permit? JF checking re this);
- a condition that they obtain the required building permits prior to installation.

NOTE FOR FILE 12.10.09

Re: DiMillo's Exemption Application for WINDSPIRE Wind Generator

I had a telephone conversation today with **Mark Hellen** of Nelson and Small (Technical Consultant) 775-5661 Ext 237 [He apologized for not getting back to us but has had a difficult couple of weeks; I called him after leaving message yesterday].

1. Proposals for security:

- a. The site already has fencing on the 2 water sides (high chain link for one segment and a lower tubular steel for the other – visible in photos) and they would fence the other 2 sides with 6 ft high black vinyl-coated chain link fence if we would like it to be fenced. This would not be within 5 ft of the water as its on the inland side.
- b. Instead/in addition he can add a 5 ft extender to the pole so that the height before reaching the moving spinner is increased from 9'1" to 14'.
- c. He confirmed that if someone put their hands into the vertical spinning mechanism that they would probably break their hand.
- d. Also he confirmed that for the City's Building Inspector they are getting a PE to review and stamp the plans etc.
- e. Re shadow flicker/ice shedding, he doesn't think these are issues but will check (and get back to me) with the company as they have piloted these in Colorado (where is snow/ice).
- f. They will do whatever we feel is appropriate as they want this installation to give a positive "message" about wind energy; they are likely to wait until Spring to install so to allow all the necessary discussions to take place with us as they want everyone "happy".

2. Context information:

- a. He was unaware of any other *Windspire* being installed in the Portland area and this one at DiMillos is the first one that Nelson & Small have been involved with (they have an approx 50 ft high *Skystream* (horizontal axis) in their front yard). He is going to check whether there is one installed nearby by others and get back to me.
- b. He is confident of the wind resource at DiMillo's (he knows Steve DiMillo and had suggested this); thinks the *Windspire* will work well as only needs 4mph; he anticipates that these will initially be most popular with small commercial uses and be located in parking lots (a 3kW version is soon to be available; currently the *Skystream* is 2.4kW and *Windspire* is 1.2-1.5kW). Householders probably won't be interested (now) as cost too high compared to savings given current cost of oil.
- c. He is supportive of the Ordinance development and willing to participate in any discussions I arrange etc.



PORTLAND MAINE

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Planning and Urban Development Department
Penny St. Louis, Director

Planning Division
Alexander Jaegerman, Director

September 28, 2011

Steve DiMillo
25 Long Wharf
Portland, ME 04101

Mark J Hellen
Nelson and Small
212 Canco Road
Portland, ME 04103

Re: **Installation of *Windspire* wind energy system near DiMillo's Floating Restaurant & Marina
144 Commercial Street
Site Plan exemption issued 01-29-2010**

Dear Mr. DiMillo and Mr. Hellen,

I am writing in regard to the fencing surrounding this installation.

The Site Plan exemption had a condition that required railings around the base of the system to discourage access. Subsequently we approved two versions of the railings.

We note that neither version of the approved railings has been installed, and that you have asked us to consider a revision to remove the fence requirement. After discussion with our office, you have installed some temporary fencing as an interim measure. While this temporary fencing does not meet the conditions of the site plan approval, we do not intend to take enforcement action at this time. As we have discussed with you, we are awaiting a final decision from the City Council on the wind ordinance, which as currently proposed does not explicitly require railings in cases such as this. The wind ordinance was anticipated to be considered by the Council on September 7, 2011 but the Council has referred it to a subcommittee and the hearing date is not known at this time.

In the interim the temporary fencing should remain at all times as currently installed. We will revisit the question of permanent fencing after the City Council has completed its review of the new ordinance. We reserve the right to require the fencing as originally approved, or as may be modified or eliminated after further review by this office.

Sincerely,

Alexander Jaegerman
Planning Division Director

Electronic Distribution:

Penny St. Louis, Director of Planning and Urban Development
Barbara Barhydt, Development Review Services Manager
Danielle West-Chuhta, Associate Corporation Counsel
Jean Fraser, Planner
Philip DiPierro, Development Review Coordinator
Marge Schmuckal, Zoning Administrator

Tammy Munson, Inspections Division Director
Ann Machado, Zoning Specialist
Gayle Guertin, Inspections Division
Lannie Dobson, Inspections Division
Approval Letter File

Hard Copy: Project File

Jean Fraser - DiMillo's Windspire

From: Barbara Barhydt
To: Fraser, Jean
Date: 9/19/2011 1:23 PM
Subject: DiMillo's Windspire
CC: Jaegerman, Alex

Hi Jean:

Penny wants correspondence prepared for DiMillo's windspire that states the temporary fencing does not meet the conditions of the site plan approval, but that we are not taking any enforcement action as we wait for the final decision from the City Council on the ordinance. In the interim, the temporary fencing may remain.

Could you draft this for my review? It may need to be signed by Alex.

Thanks.

Barbara

DIVINE'S

FLOORING RESTAURANT AND MARKET

SHIPS LOG

- 1941 - Car Ferry - New York - Bon between New Castle, Delaware & Fenwick, New Jersey
- 1947 - Car Ferry - South - Bon between Hobok & Horshon
- 1958 - Car Ferry - Upper - Bon between Hempport & Jermolow, Rhode Island
- 1969 - Bulk Carrier - Bon - Bon - Bon
- 1977 - Bulk Carrier - Bon - Bon - Bon
- 1980 - Bulk Carrier - Bon - Bon - Bon
- 1994 - Bulk Carrier - Bon - Bon - Bon

Windpower

Please...
NO
PARKING

9-9-11



Jean Fraser - Re: DiMillos Windspire

From: Alex Jaegerman
To: Barbara Barhydt; Jean Fraser
Date: 9/9/2011 12:11 PM
Subject: Re: DiMillos Windspire

I agree with you, Jean. The white fence is a reasonable substitute for the time being, and possibly permanently. We don't require keeping a clear zone for the radius of the height.

>>> Jean Fraser 9/9/2011 11:59 AM >>>
Alex and Barbara

I am following up on this since the enactment of the wind ordinance appears to be on hold- so we need to decide what to do about the fencing; its technically still a site plan requirement. The original fencing was intended to prevent/deter access to the base (and had nothing to do with fall zone).

Please see photos attached- the approved fence was 5 feet from the base; the "temporary" fence as shown in the photos is obviously less than that but the benches are farther away than 5 ft. but within the "fall" range.

This is what Mr Padula said in an 8.15.2011 e-mail to me (and he has followed up by sending info re *windspires* installed on roofs which he considers more sensible):

I was at DiMillo's the other day, in part to see their VAWT. It was spinning beautifully and silently, but, unbelievably, right over the heads of customers who were sitting UNDER the VAWT on DiMillo benches. This is clearly insane! If that baby falls over on someone's head, there will be lulu lawsuits. There has to be a safety margin around the VAWT or any other windmachine.

I am a strong supporter and investor in wind power, but we have got to use common sense. One mishap at DiMillo's and small wind in Portland will be doomed.

I also attach the PE sign off- the PE who signed off is the one who submitted the SSK-1 drawing which shows structural installation details (I don't have this in pdf). Inspections (Jeanie Burke initially, then Nick Adams) gave them a building permit.

Under the proposed wind ordinance, this installation would have been an administrative review (ie a permitted use) and would have been allowed without any fencing and in this location as it appears to meet the security and safety setback requirements. (the only question might be sound as we don't have that info and did not review it)

Personally I think it should stay as it is as - the low key white fence does clearly give the message to stay away, which is appropriate in this public area where people are being invited to linger; our request (during the review) to have it raised 5 ft higher than originally proposed means the moving parts are higher than the minimum 12 ft.

What do you think?

Jean

Jean Fraser - DiMillos Windspire

From: Jean Fraser
To: Barhydt, Barbara; Jaegerman, Alex
Date: 9/9/2011 11:59 AM
Subject: DiMillos Windspire
Attachments: 100_2841.JPG; 100_2849.JPG; 100_2844.JPG; 8.19 eng fax & temp railing design diM windspire SKMBT_C35311081913250.pdf

Alex and Barbara

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What do you think?

Jean

Jean Fraser - Fwd: Fw: Scan from N&S

From: Jean Fraser
To: Fraser, Jean
Date: 8/19/2011 6:11 PM
Subject: Fwd: Fw: Scan from N&S
Attachments: SKMBT_C35311081913250.pdf

>>> <MarkH@nelsonsmall.com> 8/19/2011 2:50 PM >>>
Dear Jean,

Please find PE's letter and pictures for the electrical inspector if you would please forward to him, also is a drawing that may work as a temp fencing I am back from vacation on Monday and will come up with an answer, there are yellow barriers there now but do not look very attractive.

----- Forwarded by Mark Hellen/nelsonsmall on 08/19/2011 02:46 PM -----

From: info@nelsonsmall.com
To: markh@nelsonsmall.com
Date: 08/19/2011 02:33 PM
Subject: Scan from N&S



380 U.S. Route One
 Falmouth, Maine 04105
 Tel: (207) 781-5242
 Fax: (207) 781-4245

FAX MEMORANDUM

TO: Mark Helen

FAX #: 775-4303

FROM: Tim Dean

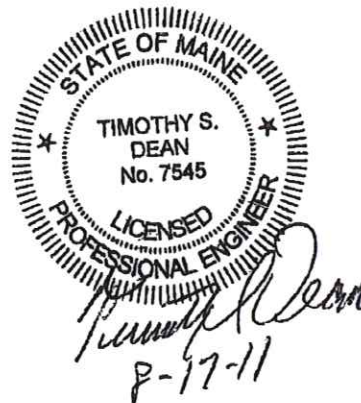
DATE: 8-17-11

RE: Windspire

FILE: 10303

of Pages (including this one): 1

I visited the site today as you requested to observe the installed connection of the windspire base to the existing pier. The connection has been installed as per the detail shown on SSK-1 dated Jan 19, 2010.

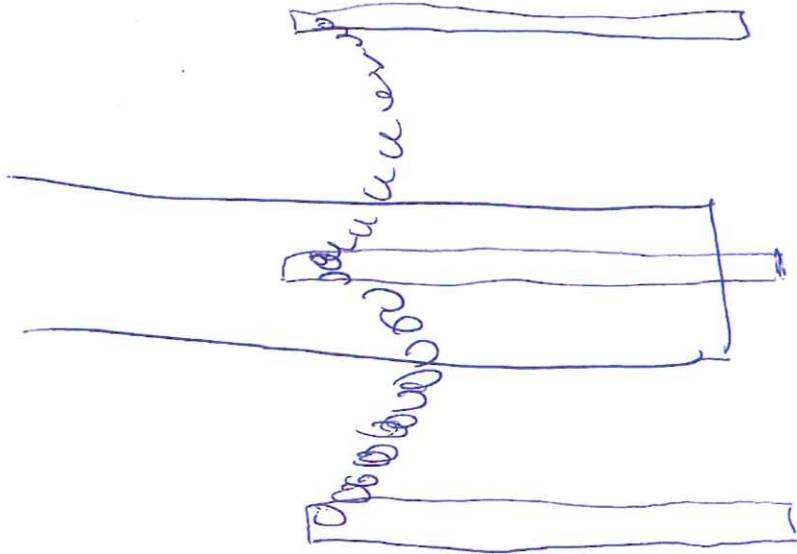


4 Floor Flangers

4-5' poles w caps
(as before)

with white plastic link chain
Between,

I'll bring em in on Monday
if you are in. To show you

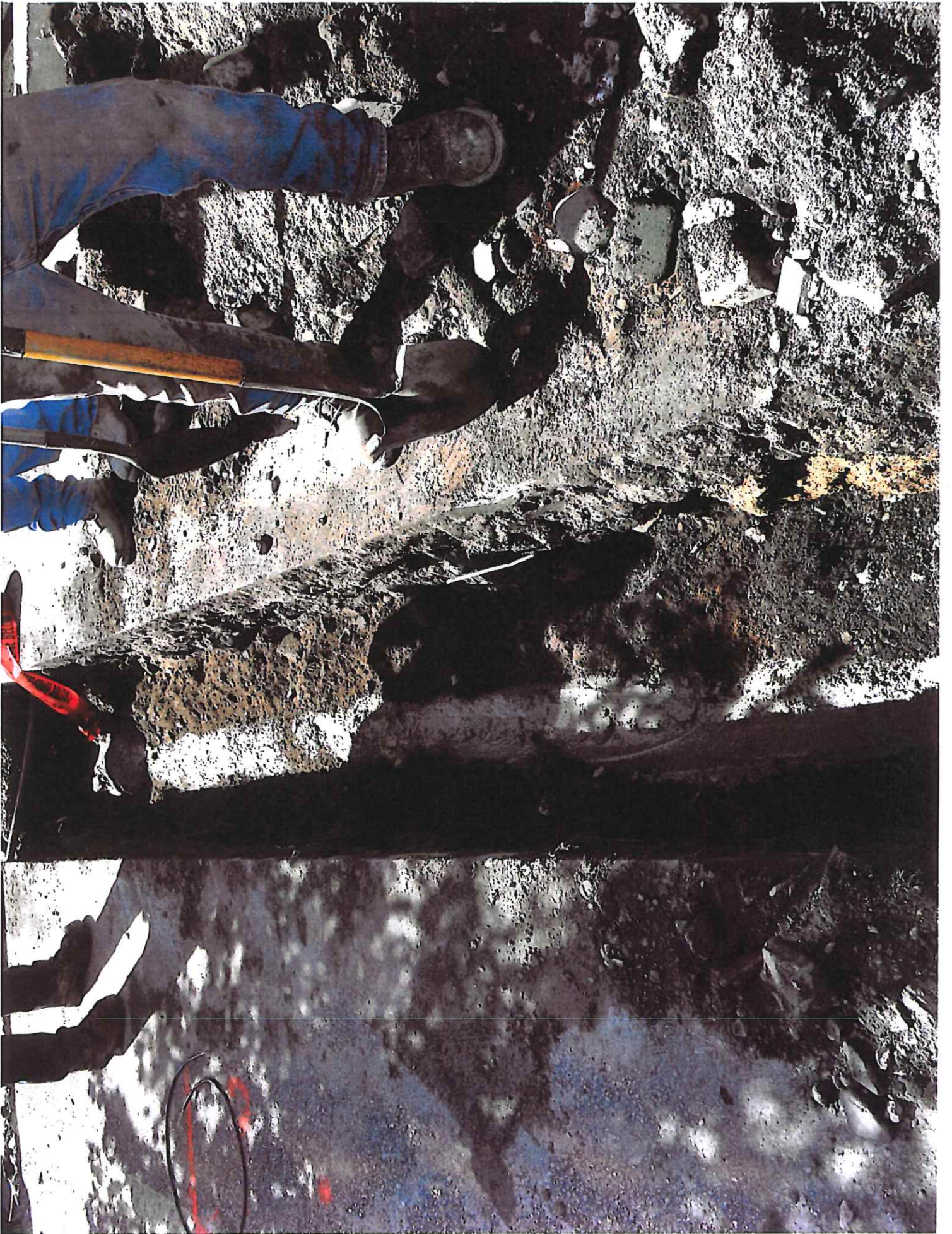














Jean Fraser - Fwd: Re: Second reply Re: Windspire

From: Jean Fraser
To: Adams, Nicholas
Date: 8/19/2011 6:08 PM
Subject: Fwd: Re: Second reply Re: Windspire
CC: Barhydt, Barbara
Attachments: 8.19 eng fax & temp railing design diM windspire SKMBT_C35311081913250.pdf

Nick

The e-mail system was down today and I only just got Groupwise back... I am on vacation next week so please respond to Mark Hellen direct.

Re the Engineers fax- it refers to a plan which I have not seen.

So I think you need to check that plan and see if it has a PE stamp- the structural stuff was Building Code so I am relying on that and your review re this not falling over!!!!

Re the fencing Barbara will let you know if OK- also it needs to follow the line of the approved fence and the benches need to be outside it.

thanks
Jean

>>> <MarkH@nelsonsmall.com> 8/19/2011 2:00 PM >>>

Dear Jean,

Thank you for the info as a temp fencing what do you think about 4 poles and plastic chain between poles giving it a nautical type appearance, I'll forward a hand drawing.

I will

From: "Jean Fraser" <JF@portlandmaine.gov>
To: <MarkH@nelsonsmall.com>
Date: 08/16/2011 04:35 PM
Subject: Re: Second reply Re: Windspire

Mark

I just got out of my meeting and was going to 'phone you.

The pole design is fine but I understand from the contractor (via our inspector) that you do not want any fencing. We would be happy to look at any other design (not chain link though).

At the time we required the fencing the draft Wind Ordinance required security fencing- but that requirement was removed by the Planning Board since you got the site plan approval. So the proposed new wind ordinance (copy attached) does not require fencing around any wind system- but it has not been enacted yet (expected to be on 9.7.2011). Once the wind ordinance is enacted I understand we could grant a waiver so that you would not need to do any fencing.

So we would like to have temporary fencing in place until the city council enacts the ordinance.

In the meantime we can receive/review the PE report.

I think that is the best way forward.

thank you
Jean
874 8728

>>> <MarkH@nelsonsmall.com> 8/16/2011 4:15 PM >>>

Dear Jean,

The PE was going down today or early tomorrow. An will email me and I'll forward ASAP to you.

As to the fence we changed that because there was no way to attach a chain link fence the wold be aesthetically pleasing so that is why I came up with the pole design.

I also have pictures for the electrical inspector of the grounding rod.

Thank You

Mark

I am off the rest of the week for my sons wedding. I will be viewing my emails and forwarding info as I get it.

Mark

From: "Jean Fraser" <JF@portlandmaine.gov>
To: <MarkH@nelsonsmall.com>
Date: 08/16/2011 11:37 AM
Subject: Second reply Re: Windspire

Mark

During the review you promised a PE sign off to Building Inspector and I gather that has not been received.

If you recall your original proposal was for vinyl covered chain link fencing around it!!!

Jean

>>> <MarkH@nelsonsmall.com> 8/16/2011 8:50 AM >>>

Dear Jean,

When can we set up a time other than Wednesday as my son is getting married before he goes back to Turkey. I am up to the Maine Energy Merchants Association in Brunswick from 10:00 to 4:00 but if today would work I would gladly meet you there as there are others working the tent. I can be reached by cell 831-6051. I am on vacation the rest of the week, but this is very important to me and I will be available by cell anytime except 5:30PM til 7:30 pm Wednesday August 17, 2011.

From: "Jean Fraser" <JF@portlandmaine.gov>
To: <MarkH@nelsonsmall.com>
Date: 08/15/2011 02:06 PM
Subject: Re: Windspire

Mark

Please put yellow tape or similar around the area that would have been fenced as if it was still under construction- as technically it is still under construction because both the building permit and site plan required the fencing.

I am consulting others here and waiting to get the results of the engineers inspection.

The concern from the public is about it falling over.

Thank you
Jean

>>> <MarkH@nelsonsmall.com> 8/15/2011 11:02 AM >>>

Good Morning Jean,

We had the job inspected first so we could explain how we did things, at the inspection on Friday I requested from the inspector to ask you if now that the tower is in place and running is there a true need for the piping and is there a way to ask for this to be changed. We are prepared to do what ever we need to do, but we hope you can now see no possible danger, as the rotating parts are 15 feet above the ground. Again, Jean we will do whatever needs to be done. As to there being benches, they were not placed there by us and were not there Friday morning at the inspection. Your time and consideration in this matter is greatly appreciated.

Thank You

Mark

My cell is 207-831-6051

From: "Jean Fraser" <JF@portlandmaine.gov>
To: <steve@dimillos.com>, "Nelson Small" <MarkH@nelsonsmall.com>
Date: 08/15/2011 10:31 AM
Subject: Windspire

Mark and Steve,

I have had reports that you have benches underneath the *Windspire* and no fencing despite that being a condition (circular fencing such as around trees, 10ft in diameter- see attached).

Members of the public are contacting me asking why people are being allowed so near it or to sit under it,.

Could you please temporarily fence it off until this issue is resolved?

thank you

Jean [attachment "revised railings as approved SKMBT_C35310021812151 from Nelson small 2.18.10.pdf" deleted by Mark Hellen/nelsonsmall]

Jean Fraser - Re: Second reply Re: Windspire

From: Jean Fraser
To: MarkH@nelsonsmall.com
Date: 8/19/2011 6:04 PM
Subject: Re: Second reply Re: Windspire
CC: Adams, Nicholas; Barhydt, Barbara; DiMillo, Steve

Mark

Our e-mail system crashed this afternoon and has only just returned.

I am on vacation next week so it will be Barbara Barhydt who will approve the railings (she has this e-mail and is on 874 8699) and Nick Adams in Inspections who will give the "OK" re the engineers sign off.

I return on August 30th.

thank you
Jean

>>> <MarkH@nelsonsmall.com> 8/19/2011 2:00 PM >>>

Dear Jean,

Thank you for the info as a temp fencing what do you think about 4 poles and plastic chain between poles giving it a nautical type appearance, I'll forward a hand drawing.

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From: "Jean Fraser" <JF@portlandmaine.gov>

To: <MarkH@nelsonsmall.com>

Date: 08/15/2011 02:06 PM

Subject: Re: Windspire

Mark

Please put yellow tape or similar around the area that would have been fenced as if it was still under construction- as technically it is still under construction because both the building permit and site plan required the fencing.

I am consulting others here and waiting to get the results of the engineers inspection.

The concern from the public is about it falling over.

Thank you
Jean

>>> <MarkH@nelsonsmall.com> 8/15/2011 11:02 AM >>>

Good Morning Jean,

We had the job inspected first so we could explain how we did things, at the inspection on Friday I requested from the inspector to ask you if now that the tower is in place and running is there a true need for the piping and is there a way to ask for this to be changed. We are prepared to do what ever we need to do, but we hope you can now see no possible danger, as the rotating parts are 15 feet above the ground. Again, Jean we will do whatever needs to be done. As to there being benches, they were not placed there by us and were not there Friday morning at the inspection. Your time and consideration in this matter is greatly appreciated.

Thank You

Mark

My cell is 207-831-6051

From: "Jean Fraser" <JF@portlandmaine.gov>
To: <steve@dimillos.com>, "Nelson Small" <MarkH@nelsonsmall.com>
Date: 08/15/2011 10:31 AM
Subject: Windspire

Mark and Steve,

I have had reports that you have benches underneath the *Windspire* and no fencing despite that being a condition (circular fencing such as around trees, 10ft in diameter- see attached).

Members of the public are contacting me asking why people are being allowed so near it or to sit under it.

Could you please temporarily fence it off until this issue is resolved?

thank you

Jean [attachment "revised railings as approved SKMBT_C35310021812151 from Nelson small 2.18.10.pdf" deleted by Mark Hellen/nelsonsmall]

Jean Fraser - Re: Second reply Re: Windspire

From: Jean Fraser
To: MarkH@nelsonsmall.com
Date: 8/16/2011 4:35 PM
Subject: Re: Second reply Re: Windspire

Mark

I just got out of my meeting and was going to 'phone you.

The pole design is fine but I understand from the contractor (via our inspector) that you do not want any fencing. We would be happy to look at any other design (not chain link though).

At the time we required the fencing the draft Wind Ordinance required security fencing- but that requirement was removed by the Planning Board since you got the site plan approval. So the proposed new wind ordinance (copy attached) does not require fencing around any wind system- but it has not been enacted yet (expected to be on 9.7.2011). Once the wind ordinance is enacted I understand we could grant a waiver so that you would not need to do any fencing.

So we would like to have temporary fencing in place until the city council enacts the ordinance.

In the meantime we can receive/review the PE report.

I think that is the best way forward.

thank you
Jean
874 8728

>>> <MarkH@nelsonsmall.com> 8/16/2011 4:15 PM >>>

Dear Jean,

The PE was going down today or early tomorrow. An will email me and I'll forward ASAP to you.

As to the fence we changed that because there was no way to attach a chain link fence the wold be aesthetically pleasing so that is why I came up with the pole design.

I also have pictures for the electrical inspector of the grounding rod.

Thank You

Mark

I am off the rest of the week for my sons wedding. I will be viewing my emails and forwarding info as I get it.

Mark

From: "Jean Fraser" <JF@portlandmaine.gov>
To: <MarkH@nelsonsmall.com>
Date: 08/16/2011 11:37 AM
Subject: Second reply Re: Windspire

Mark

During the review you promised a PE sign off to Building Inspector and I gather that has not been received.

If you recall your original proposal was for vinyl covered chain link fencing around it!!!

Jean

>>> <MarkH@nelsonsmall.com> 8/16/2011 8:50 AM >>>

Dear Jean,

When can we set up a time other than Wednesday as my son is getting married before he goes back to Turkey. I am up to the Maine Energy Merchants Association in Brunswick from 10:00 to 4:00 but if today would work I would gladly meet you there as there are others working the tent. I can be reached by cell 831-6051. I am on vacation the rest of the week, but this is very important to me and I will be available by cell anytime except 5:30PM til 7:30 pm Wednesday August 17, 2011.

From: "Jean Fraser" <JF@portlandmaine.gov>
To: <MarkH@nelsonsmall.com>
Date: 08/15/2011 02:06 PM
Subject: Re: Windspire

Mark

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under construction- as technically it is still under construction because both the building permit and site plan required the fencing.

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Jean Fraser - Re: di Millos

From: Jean Fraser
To: Adams, Nicholas
Date: 8/16/2011 1:26 PM
Subject: Re: di Millos

Nick

Thank you.

We would like a temp fence for now and to see the engineers sign off.

It would be great if you could measure the distance between the "ground" and the bottom of the moving parts....and could you also measure the distance between the nearest bench and the base of the system (if you have time)- (I will be going out there tomorrow to take photos etc. but am tied up in meetings until then)

I think we will want to wait until the City has enacted the wind ordinance (anticipated to be 9.7.2011) - if its enacted then we would probably waive the permanent fencing but maybe ask for the benches to be moved if they are close to the base- that requirement re benches is still under discussion so don't mention as of yet.

Many thanks
Jean

>>> Nicholas Adams 8/16/2011 1:04 PM >>>
Jean,

I talked to the contractor today. He has the engineers letter and will be sending it me. I didn't measure the exact height but the contractor states it is built to the plans. I will gladly measure it when I inspect to see if the temp fence has been installed. Feel free to contact me with other questions or concerns.

Nick

>>> Jean Fraser 8/16/2011 11:35 AM >>>
Nick

Could you please forward me a copy of the PE sign off on this when you get it.

Can you verify the "clear" height above the surrounding ground level before the "spinning" section?

Have they put up a tape around the base of the system or some other "fencing" as I requested?

thanks
Jean

Jean Fraser - di Millos

From: Jean Fraser
To: Adams, Nicholas
Date: 8/16/2011 11:35 AM
Subject: di Millos

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thanks

Jean

Jean Fraser - Re: Wind Ordinance Update

From: Jean Fraser
To: alpadula@aol.com
Date: 8/16/2011 11:33 AM
Subject: Re: Wind Ordinance Update

It should be at least 14 feet as per the approval; the applicant tells me it was constructed at 15 feet. The proposed ordinance requires a minimum of 12 feet "clearance" (and the Planning Board took out any requirements for fencing based on several public comments as the Board agreed that they did not think fencing was needed).

The di Millos system is subject to a PE structural engineer sign off.

So there are different perceptions re safety of these systems- I have seen photos of many many systems around the country right over children's playgrounds etc. and I am don't think they are any more a safety issue than traffic light supports/flag poles/utility poles etc.

>>> <alpadula@aol.com> 8/16/2011 11:12 AM >>>

Dear Jean:

If memory serves, I would say DiMillo's VAWT begins 6 [six] feet off the ground. alp

-----Original Message-----

From: Jean Fraser <JF@portlandmaine.gov>
 To: alpadula <alpadula@aol.com>
 Sent: Mon, Aug 15, 2011 10:22 am
 Subject: Re: Wind Ordinance Update

Hi

They were supposed to install a fence around it, 10 ft in diameter and we are following up on that.

However, there were representations to the Planning Board during the review of the wind ordinance requesting that local fencing not be required as a matter of course so there is nothing in the not-yet-enacted ordinance that requires it as long as the moving parts are 12 feet above ground.

There are safety setbacks from property boundaries and streets (of at least 1X height of system above ground) but that doesn't stop people walking underneath them. Most engineers will confirm that these do not fall over unless hurricane or similar but given that windspires have had a rocky history I agree there should not be benches underneath!!!.

Thanks for the info.

Jean

>>> <alpadula@aol.com> 8/13/2011 12:56 PM >>>

Dear Jean:

I was at DiMillo's the other day, in part to see their VAWT. It was spinning beautifully and silently, but, unbelievably, right over the heads of customers who were sitting UNDER the VAWT on DiMillo benches. This is clearly insane! If that baby falls over on someone's head, there will be lulu lawsuits. There has to be a safety margin around the VAWT or any other windmachine.

I am a strong supporter and investor in wind power, but we have got to use common sense. One mishap at DiMillo's and small wind in Portland will be doomed.

Sincerely,

Alfred Padula

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-----Original Message-----

From: Jean Fraser <JF@portlandmaine.gov>

To: Jean Fraser <JF@portlandmaine.gov>

Sent: Fri, Aug 12, 2011 4:47 pm

Subject: Wind Ordinance Update

Update:

The Planning Board has recently recommended the attached final Wind Energy Generation Ordinance to the City Council for enactment;; the City Council Hearing will be Wednesday, September 7th, 2011.

[The associated Sound Technical Standard - also attached - has already been approved by the Planning Board]

The Council Order and staff report can be found at:

<http://www.portlandmaine.gov/councilpacket.htm>

Additional background information (PB Reports and materials) can be found at: <http://www.portlandmaine.gov/planning/default.asp> (go to "more" under first item)

You may send written comments (to me and I will ensure they are forwarded to the City Council) or you may speak at the Council Hearing.

You will receive a formal notice of the Council Hearing nearer to the meeting date.

Jean
874 8728

Jean Fraser - Re: Windspire

From: Jean Fraser
To: MarkH@nelsonsmall.com
Date: 8/16/2011 10:42 AM
Subject: Re: Windspire

Mark

This is not my call - I need to discuss it with others at a high level as this was a condition of approval that related to safety. So meeting just with me will not necessarily resolve this and I have a meeting here at 3pm today and one tomorrow morning.

Please ensure a yellow or orange "ribbon" is in place around the system for now.

I will be consulting internally today and will call you on your cell phone once I have more information. The proximity of the benches is one of the issues.

thank you
Jean

>>> <MarkH@nelsonsmall.com> 8/16/2011 8:50 AM >>>

Dear Jean,

When can we set up a time other than Wednesday as my son is getting married before he goes back to Turkey. I am up to the Maine Energy Merchants Association in Brunswick from 10:00 to 4:00 but if today would work I would gladly meet you there as there are others working the tent. I can be reached by cell 831-6051. I am on vacation the rest of the week, but this is very important to me and I will be available by cell anytime except 5:30PM til 7:30 pm Wednesday August 17, 2011.

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To: <MarkH@nelsonsmall.com>
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Subject: Re: Windspire

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The concern from the public is about it falling over.

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Date: 08/15/2011 10:31 AM
Subject: Windspire

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I have had reports that you have benches underneath the *Windspire* and no fencing despite that being a condition (circular fencing such as around trees, 10ft in diameter- see attached).

Members of the public are contacting me asking why people are being allowed so near it or to sit under it,

Could you please temporarily fence it off until this issue is resolved?

thank you

Jean [attachment "revised railings as approved SKMBT_C35310021812151 from Nelson small 2.18.10.pdf" deleted by Mark Hellen/nelsonsmall]

Jean Fraser - Re: Windspire

From: Jean Fraser
To: MarkH@nelsonsmall.com
Date: 8/15/2011 2:07 PM
Subject: Re: Windspire

Mark

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Jean Fraser - Fwd: Windspire

From: Jean Fraser
To: Barhydt, Barbara; DiPierro, Philip
Date: 8/15/2011 2:00 PM
Subject: Fwd: Windspire
CC: Jaegerman, Alex
Attachments: revised railings as approved SKMBT_C35310021812151 from Nelson small 2.18.10.pdf; PA310031.JPG

Hi

I spoke to Nick Adams in Inspections and he is awaiting an engineering report since they constructed it without any inspections.

He agrees the temporary fence is a good idea until we are sure it meets engineering req's and have had time to consider the situation.

I have had this response from Nelson and Small (who sell it and arranged installation):

Good Morning Jean,

We had the job inspected first so we could explain how we did things, at the inspection on Friday I requested from the inspector to ask you if now that the tower is in place and running is there a true need for the piping and is there a way to ask for this to be changed. We are prepared to do what ever we need to do, but we hope you can now see no possible danger, & the rotating parts are 15 feet above the ground. Again, Jean we will do whatever needs to be done. As to there being benches, they were not placed there by us and were not there Friday morning at the inspection.

Your time and consideration in this matter is greatly appreciated.

Nick tells me that the benches are near but not under it.

The "complaint" is from Alfred Padula and reads:

Dear Jean:

I was at DiMillo's the other day, in part to see their VAWT.

It was spinning beautifully and silently, but, unbelievably, right over the heads of customers who were sitting UNDER the VAWT on DiMillo benches. This is clearly insane! If that baby falls over on someone's head, there will be lulu lawsuits. There has to be a safety margin around the VAWT or any other windmachine.

I am a strong supporter and investor in wind power, but we have got to use common sense. One mishap at DiMillo's and small wind in Portland will be doomed.....

Phil- what do you think????

For discussion...

Jean

>>> Jean Fraser 8/15/2011 11:43 AM >>>

For info- I understand that they have asked Inspections whether they can omit some or all of the fencing that was a condition of site plan approval (it was an exemption request).

I attach a photo of a *Windspire* in Scarborough for info.

At the time this was reviewed, the Wind Ordinance included a requirement for fencing around all systems. Also as this was a relatively lightweight system and was being bolted to a waterside deck, it was considered fencing was a good idea and the attached was explicitly approved.

The wind ordinance (not yet enacted- going to CC on 9.7.2011) does not now include a requirement for fencing around wind systems- the first draft had a provision which was removed by the planning board (based on representations from Historic Preservation and the Munjoy Hill Neighborhood Assoc Wind Turbine Group).

I have had one member of the public (a well known person who has been critical of the City in the past) raise a concern over the lack of fencing and others may also be concerned.

I have requested temporary fencing to buy time for further discussion, as I genuinely do not know whether there is a safety issue here or not (the complainant was concerned about the system falling over; at the time of the review the concern was people being able to reach the spinning part).

Jean

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To: Barhydt, Barbara; Jaegerman, Alex
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Subject: Fwd: Windspire
CC: Adams, Nicholas; Clegg, Nicole; DiPierro, Philip; St. Louis, Penny
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Sent: Fri, Aug 12, 2011 4:47 pm

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Jean
874 8728

Jean Fraser - Re: Scan from N&S

From: Jean Fraser
To: info@nelsonsmall.com
Date: 3/2/2010 3:48 PM
Subject: Re: Scan from N&S
CC: Bourke, Jeanie

Fao Mark Hellen

Re (Planning Division) Site Plan Exemption #69900044 for 23 Long Wharf Re (Inspections Division) Building Permit #09-1279 (144 Commercial St)

I refer to the proposed *Windspire* installation at diMillos Restaurant and the Site Plan Exemption dated Jan 29, 2010.

The proposed "railings" as outlined in this scan is understood to create a round circle of poles around the base of the *Windspire* support pole - my understanding is that it creates a railing but instead of forming a square it forms a circle, 5 ft in diameter (the *Windspire* rotor is 4 ft in diameter). Although the poles are at 8 inch centers, this is reduced by the width of the pole.

I have consulted with my colleagues and confirm that this approach is approved for the purpose of issuing the Building Permit. Our review suggests that this should satisfy our concerns about safety of the public and minimizing the potential of the *Windspire* to be an "attractive nuisance".

If for any reason this approach does not succeed in meeting the concerns we have discussed, I would hope this could be reconsidered/upgraded if necessary to ensure a "positive" project.

Jean

Jean Fraser, Planning Division
City of Portland
874 8728

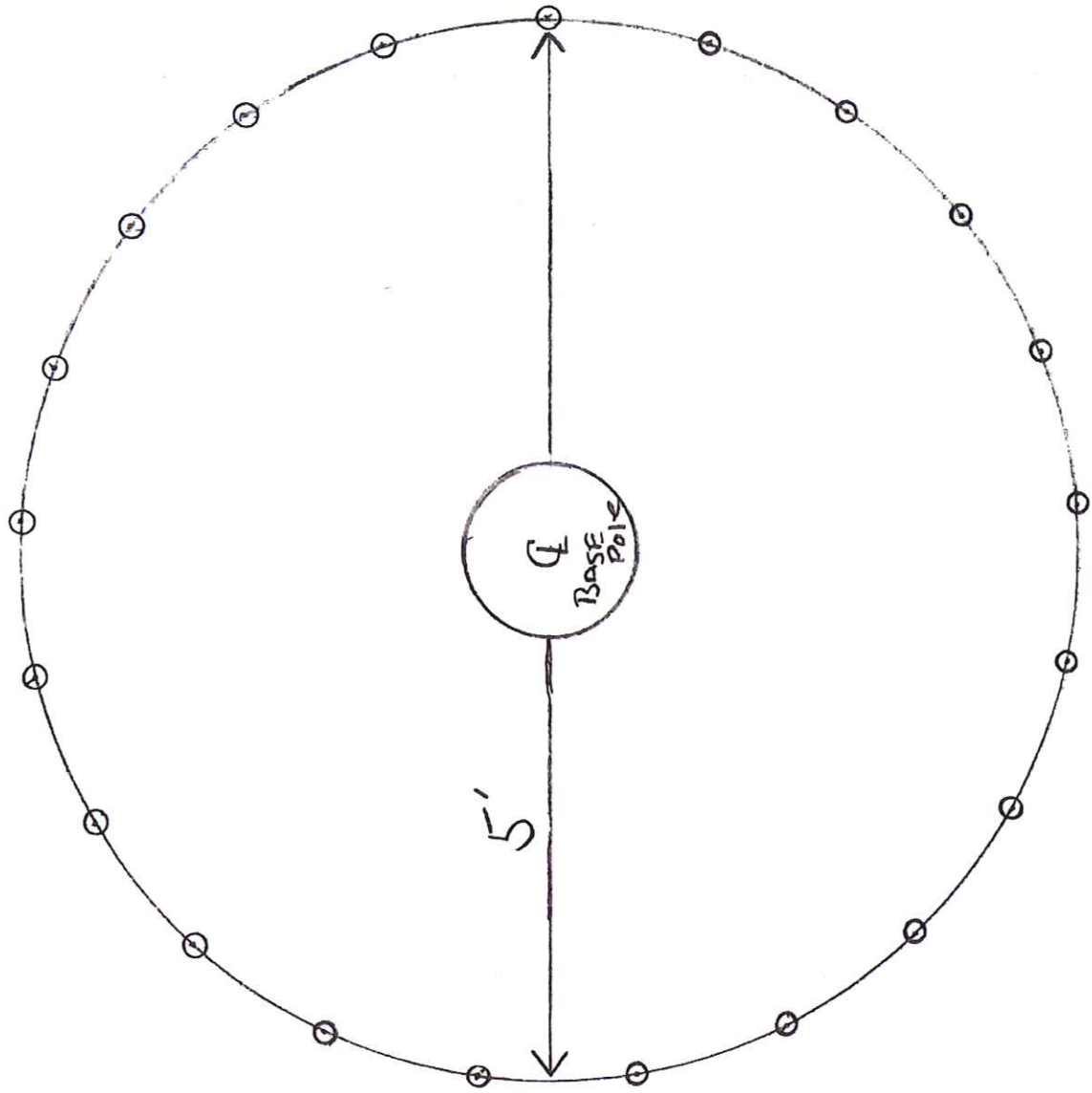
>>> <info@nelsonsmall.com> 2/18/2010 12:16 PM >>>

PROPOSED POLE TYPE PROTECTOR FOR DIMILLO'S WINDSPIRE BASE

5 FOOT IN DIAMETER

21 1" GALVINIZED IRON PIPES THREADED ON BOTH ENDS 9" ON CENTER, ACTUAL SPACE BETWEEN PIPES WILL BE 8". PIPES WILL BE 5' HIGH THREADED INTO FLOOR FLANGES THAT WILL BE SECURED INTO PIER. TOP OF PIPE WILL BE CAPPED WITH A GALVINIZED PIPE CAP. PIPES WILL BE PAINTED THE SAME COLOR AS THE BASE POLE.

THIS CONCEPT WILL TAKE UP LESS ROOM WHILE PROVIDEING PROTECTION THAT THE CITY IS LOOKING FOR AND REMAINING PLEASEING TO THE EYE. IT IS BASED ON THE CONCEPT OF TREE PROTECTORS.



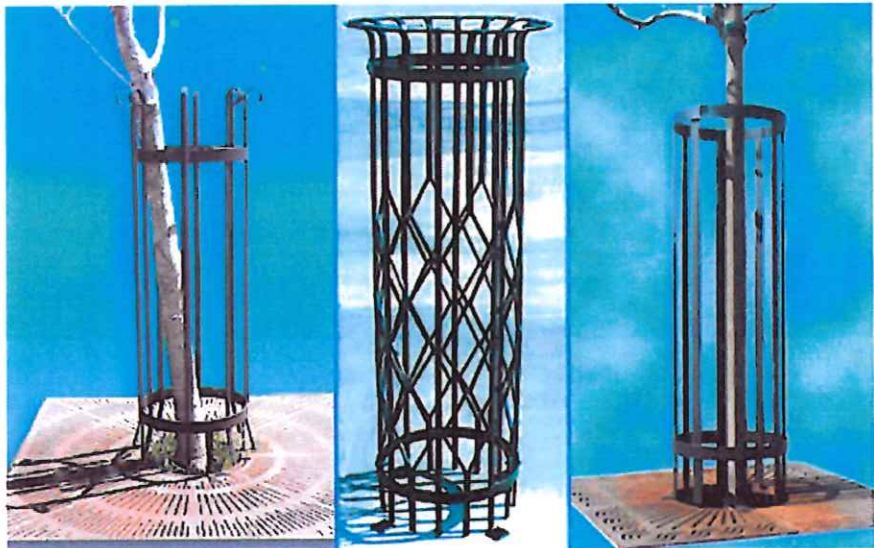


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Ironsmith All Steel Tree Guards

Ironsmith offers 10 versatile standard tree guard designs. All of our tree guards are fabricated in halves for time-saving bolt together installation. All installation hardware is provided by Ironsmith. Our tree guards are jig welded from hot rolled steel (ASTM-A36). Guards can be attached to the tree grate by first drilling & then bolting, or can be mounted to a cross bar, available as an option with the grate frames. Standard height is 5' & standard tree opening is 16", however any height & opening may be requested.



Ironsmith Custom Tree Guards

In addition to our 10 rugged standard tree guard designs, Ironsmith offers custom design & fabrication to meet your unique design vision. Ironsmith can produce your ornamental metal work in cast iron, bronze, as well as aluminum and copper alloys. Our design department can assist with design concepts & provide design visualization through 3D modeling & rendering.



RECEIVED

JAN 27 2010

City of Portland
Planning Division

30-14-1

ENTRANCE TO
DI MILLO'S

EDGE OF DECK

x x x x x x



EDGE OF BASE PLATE & PIPE

2 FOOT RADIUS OR BLADES

x x x x x x x x

x - 5.6' HIGH Tubular Railings similar to
EXISTING

5' EXTENSION TO BE ADDED TO BASE

AS per request of Jean Frascan

RECEIVED

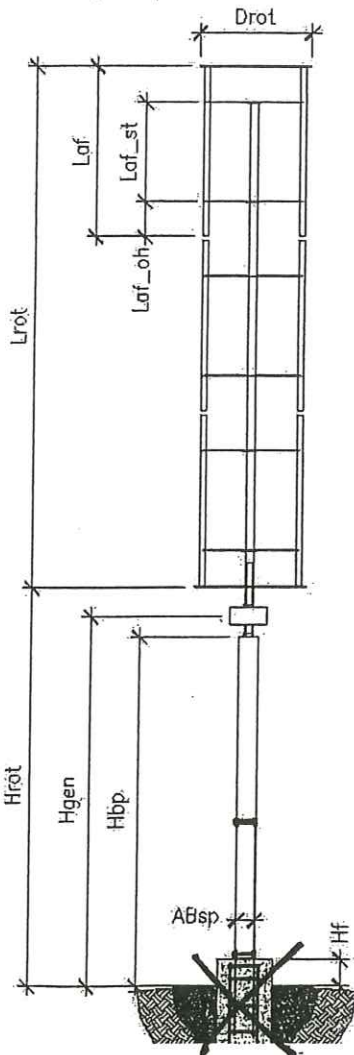
JAN 27 2010

Dept. of Building Inspections
City of Portland Maine

MAINING SIDE

Material Specifications:

Mechanical Item	Size	Grade
Top Shaft:	3.5" OD x 0.120" Wall x 230" Lg.	Steel, ASTM A513 Type 5
Bottom Shaft:	3.5" OD x 0.500" Wall x 114" Lg.	Steel, ASTM A513 Type 5
Tower:	8.625" OD x 0.188" Wall x 84" Lg. & 8.625" OD x 0.322" Wall x 60" Lg.	Steel, ASTM A500 Grade B
Base Plate:	10" eq. x 1" Thick SEE DETAIL	Steel, ASTM A36
Anchor Bolts:	(4) M20 x 1m Length (4.5" projection)	Steel, ISO 898.1 - Class 8.8
Airfoils:	5" Chord x 78" Length	Aluminum, 6063-T6
Airfoil Struts:	1.5" Width x 0.25" Thick	Aluminum, 6061-T6
Elastomer Dampers:	2" OD x 0.75" ID x 0.125" Thick	Fabreeka Washer - (5) at each anchor bolt (4 below, 1 above base plate)



Cut-In Wind Speed = 9 mph (200 rpm)
 Cut-Out Wind Speed = 34 mph (420 rpm)
Design Peak Gust = 105 mph
 Peak Lateral Force (105mph) = 814 lbs.
 Peak Overturing Moment (105mph) = 17,244 lbs*ft
 Approx. Weight = 750 lbs

 Rated Power (RP) = 1,200 Watts
 Wind Speed @ RP = 25 mph

 1st Resonance Mode = 55 rpm
 2nd Resonance Mode = 275 rpm

D_{rot} = 48 in
 L_{rot} = 240 in
 L_{af} = 78 in
 L_{af_st} = 46 in
 L_{af_oh} = 16 in
 H_{rot} = 180 in
 H_{gen} = 168 in
 H_{bp} = 156 in
 H_f = 12 in (adjustable with engineering)
 ABsp = 8 in

RECEIVED

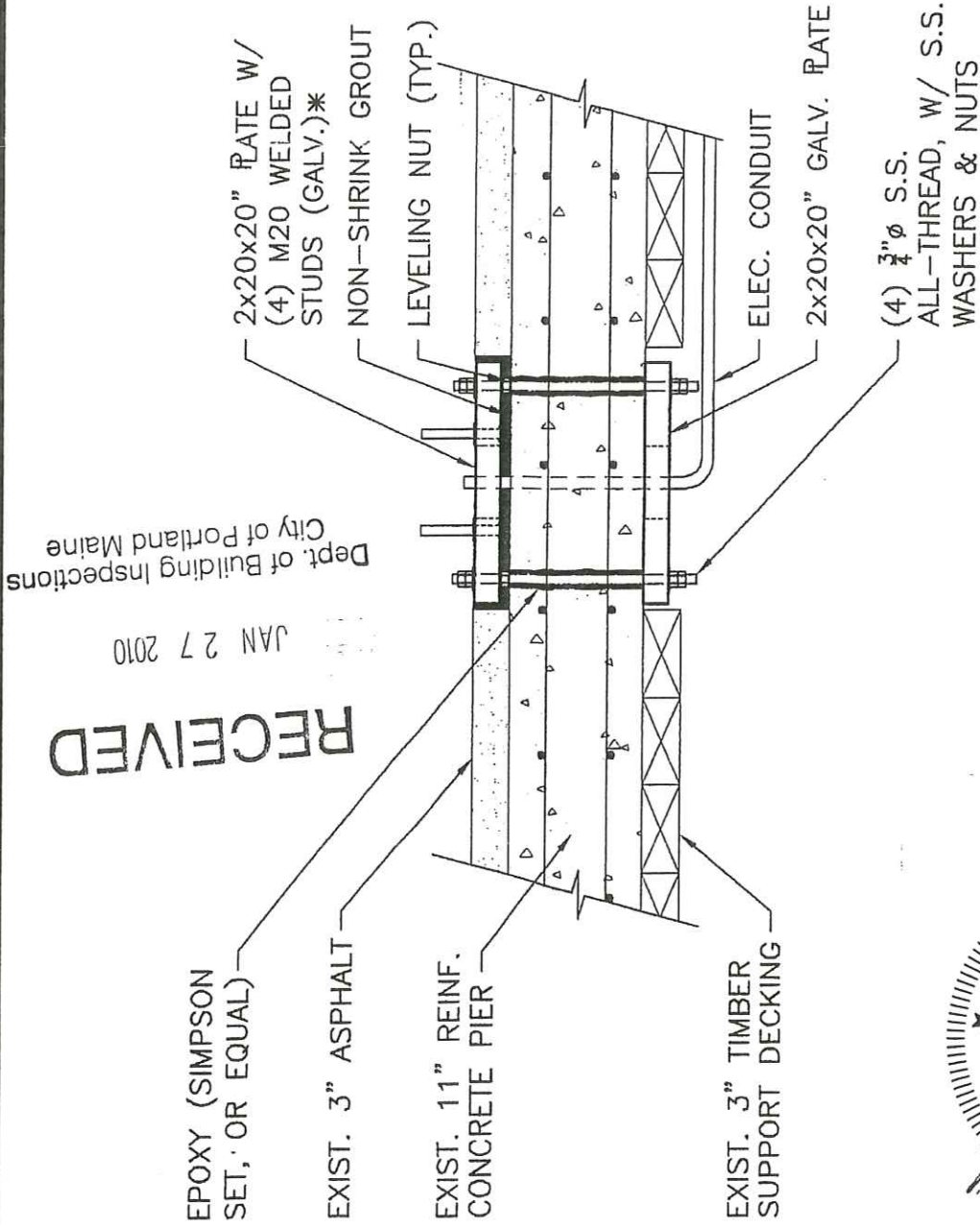
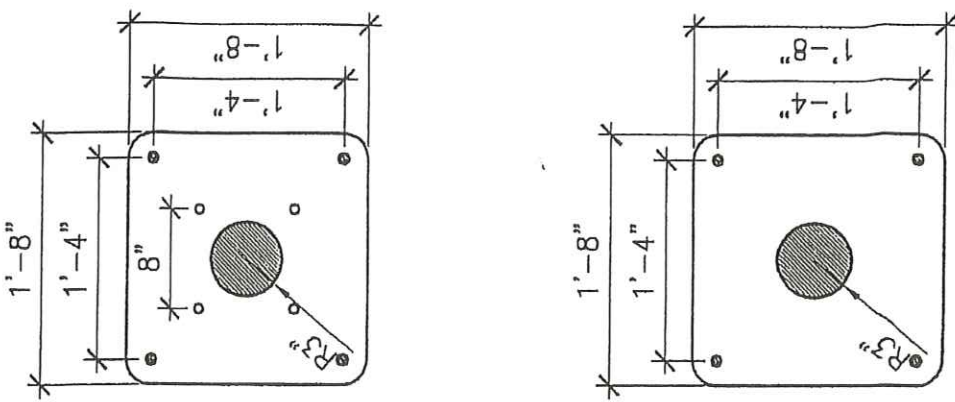
JAN 27 2010

Dept. of Building Inspections
City of Portland Maine

SEE
DETAIL
SSK-1

Note: Product variations, revised base connections or additional connections, and/or removal of Fabreeka dampening washers will drastically effect the rotordynamics and may result in overstressed conditions. Prior to any revisions or modifications, consult with engineering department.

30-11-1



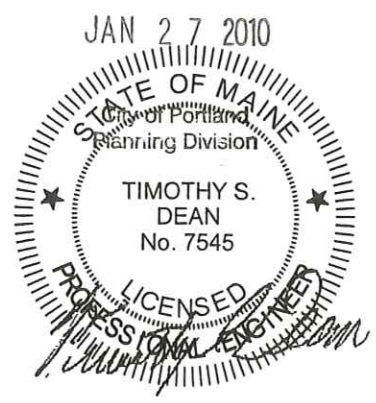
Dept. of Building Inspections
City of Portland Maine

RECEIVED
JAN 27 2010

1.2kW WINDSPIRE - BASE CONNECTION

* M20 STUDS ARE CLASS 8.8

RECEIVED



01/19/10



NELSON & SMALL
DIMILLO'S WINDSPIRE
PORTLAND, MAINE

SCALE: N.T.S.
DATE: JANUARY 19, 2010
DESG BY: TSD
PROJECT: 10303

SSK-1

30-H-1



DiMillo's Windspire
Jean Fraser to: markh

12/15/2009 12:12 PM

Mark,

Further to our conversation last week, I write to confirm that we would like some additional/revised plans submitted that include the additional items that we discussed.

Our main concern is public safety since the location of the Windspire is immediately adjacent the main entrance to DiMillos and also easily accessible by pedestrians via the parking area on Commercial Street. Virtually all other wind energy ordinances I have reviewed (and the one I am drafting for Portland) include requirements for non-climbable poles, clearances for moving parts, and security and we consider that following would be appropriate at this location to address safety issues:

1. 5-6 ft high tubular railings (similar to the blue painted ones that are there but higher) around the generator base and securely attached to the existing railing and chain link fencing on the waterside to prevent unauthorized access to the generator base;
2. Add a 5 foot extender to the pole so that the moving parts of the wind generator are at least 12 ft above the "ground" (eg existing asphalt level).

Please send me more detailed plans (this can be by pdf in an e-mail) showing the actual proposed location of the base/pole, the fencing (clarifying the spec) and the revised elevation showing the revised pole and height.

Once we receive these details we can quickly continue processing the Exemption Request.

Please do not hesitate to telephone me if you have any questions- I will be in the office today until about 1pm (my daughter is unwell) and I will be in the office tomorrow.

Thank you

Jean

Jean Fraser, Planner
City of Portland
874 8728

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JAN 27 2010

Dept. of Building Inspections
City of Portland Maine

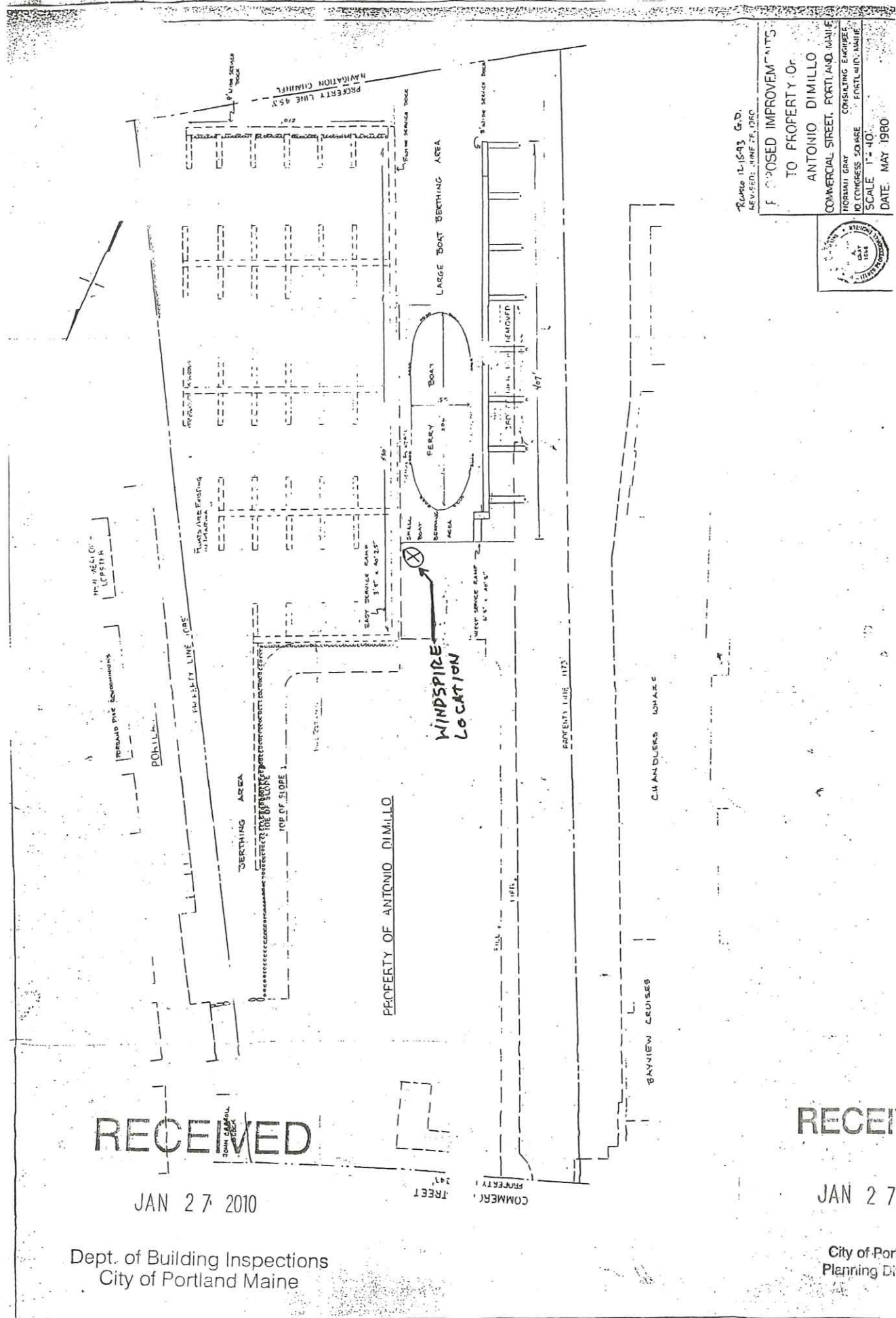
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JAN 27 2010

City of Portland
Planning Division

30-11-1

Proposed Improvements
 TO PROPERTY OF
 ANTONIO DIMILLO
 COMMERCIAL STREET, PORTLAND, MAINE
 NORMAN GRAY CONSULTING ENGINEERS
 10 CONGRESS SQUARE PORTLAND, MAINE
 SCALE 1" = 40'
 DATE: MAY 1980



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JAN 27 2010

Dept. of Building Inspections
City of Portland Maine

RECEIVED

JAN 27 2010

City of Portland
Planning Division

NOTE FOR FILE 12.10.09

Re: DiMillo's Exemption Application for WINDSPIRE Wind Generator

I had a telephone conversation today with **Mark Hellen** of Nelson and Small (Technical Consultant) 775-5661 Ext 237 [He apologized for not getting back to us but has had a difficult couple of weeks; I called him after leaving message yesterday].

1. Proposals for security:

- a. The site already has fencing on the 2 water sides (high chain link for one segment and a lower tubular steel for the other – visible in photos) and they would fence the other 2 sides with 6 ft high black vinyl-coated chain link fence if we would like it to be fenced. This would not be within 5 ft of the water as its on the inland side.
- b. Instead/in addition he can add a 5 ft extender to the pole so that the height before reaching the moving spinner is increased from 9'1" to 14'.
- c. He confirmed that if someone put their hands into the vertical spinning mechanism that they would probably break their hand.
- d. Also he confirmed that for the City's Building Inspector they are getting a PE to review and stamp the plans etc.
- e. Re shadow flicker/ice shedding, he doesn't think these are issues but will check (and get back to me) with the company as they have piloted these in Colorado (where is snow/ice).
- f. They will do whatever we feel is appropriate as they want this installation to give a positive "message" about wind energy; they are likely to wait until Spring to install so to allow all the necessary discussions to take place with us as they want everyone "happy".

2. Context information:

- a. He was unaware of any other *Windspire* being installed in the Portland area and this one at DiMillos is the first one that Nelson & Small have been involved with (they have an approx 50 ft high *Skystream* (horizontal axis) in their front yard). He is going to check whether there is one installed nearby by others and get back to me.
- b. He is confident of the wind resource at DiMillo's (he knows Steve DiMillo and had suggested this); thinks the *Windspire* will work well as only needs 4mph; he anticipates that these will initially be most popular with small commercial uses and be located in parking lots (a 3kW version is soon to be available; currently the *Skystream* is 2.4kW and *Windspire* is 1.2-1.5kW). Householders probably won't be interested (now) as cost too high compared to savings given current cost of oil.
- c. He is supportive of the Ordinance development and willing to participate in any discussions I arrange etc.

From: Jean Fraser
To: Barhydt, Barbara
Date: 1/29/2010 4:04 PM
Subject: Wind Generator at DiMillos - Exemption

Barbara

I have done all the "paperwork" on this for sign off. Jeanie will deal with icing.

Re the Exemption condition re the railings, this is what I am suggesting gets put in HTE (and I will add to the building Permit log in UI):

Exemption is granted subject to the following conditions:

- 1. The railing specifications shall be submitted for review and approval prior to the issuance of a Building Permit; and**
- 2. All required building permits shall be obtained prior to installation.**

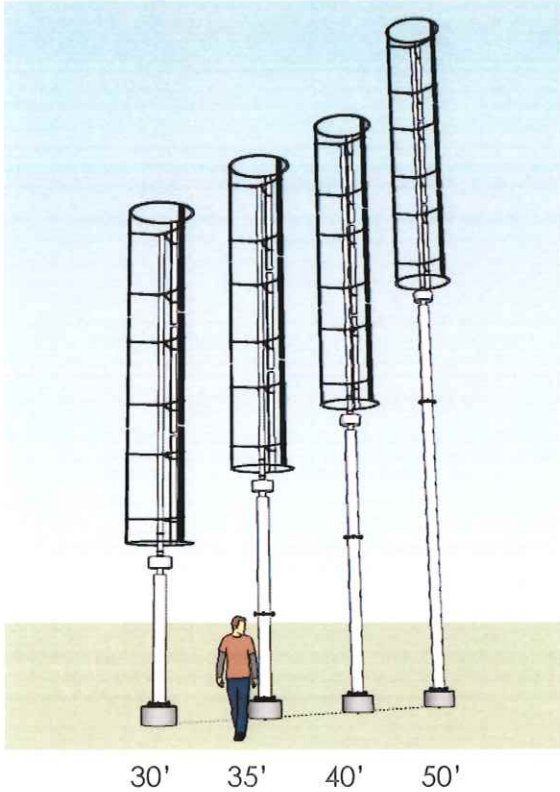
Re the first condition I wasn't sure if you wanted us to review and approve the railings prior to Inspections issuing the building permit; I feel that this wording gives us some leverage to make sure the railing are installed.

Please confirm re the wording.

Also, I note that in HTE there is no "Exemption Decision Letter" to draft/send, so how do you want me to communicate the decision to the applicant????

Thanks
Jean

BBok.

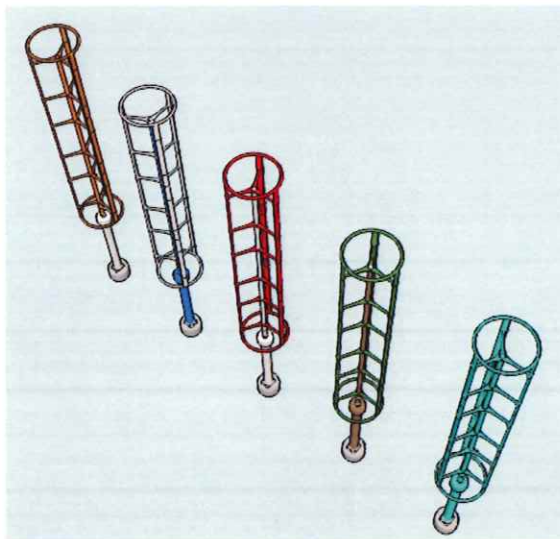


HEIGHTS

Windspire® can be installed at several heights depending on site conditions. Available base pole extensions can add 5', 10' and 20' to the original 30' Windspire height.

COLORS

Custom order in any color.



SYSTEM COMPONENTS

A complete Windspire wind turbine includes four basic system components: rotor, generator, inverter, and an integrated structure.

ROTOR

The lift-based rotor converts the energy of moving air into rotational mechanical energy. Spinning only 2-3 times the speed of the wind (compared to about 7 times for propeller-based turbines), makes Windspire virtually silent. The vertical design allows it to capture wind shifts instantaneously and continue to produce energy in turbulent conditions.

GENERATOR

The generator converts the mechanical energy into electricity by rotating a magnetic field over coils to produce an electric current. Designed for 98% efficiency at low RPM.

INVERTER

The built-in inverter converts electricity to grid-ready 120 v. AC form. UL rating indicates that no additional electronics are needed for inter-connection with utility. The inverter also controls generator and rotor speeds to optimize power output.

STRUCTURE

Complete integration translates to smaller parts and easier installation/maintenance through a hinged, monopole system. Sealed bearings require no greasing. Pole made of recycled steel.

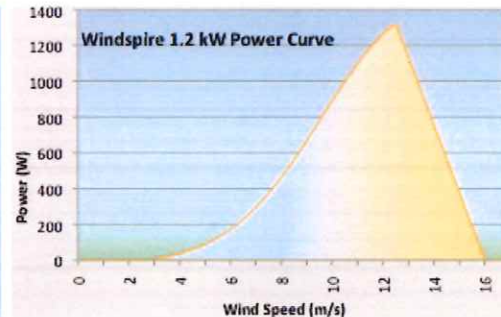
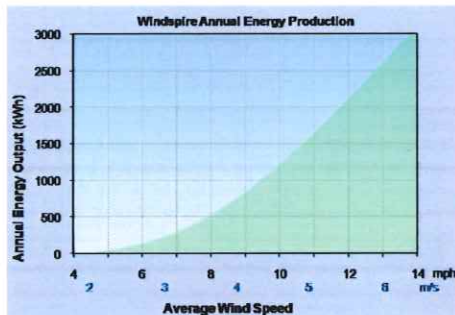
1.2 kW Standard Windspire®

Specifications



Annual Energy Production (AEP) @ 12 mph	2000 kWh*
Instantaneous Power Rating (IPR)	1.2 kW (1200 watts)*
Maximum Power at 30 mph (13.4 m/s)	1.6 kW (1600 watts)*
Standard Unit Height	30 ft 9.1 m
Sound Measurement	6 dB above ambient (15 mph @ 6ft from base)
Total Weight	624 lb 283 kg
Rotor Type	Vertical-Axis Low Speed Giromill
Rotor Material	Aircraft Grade Aluminum
Rotor Height/Diameter	20ft/4ft (6.1m/1.2m)
Swept Area	80 sf / 7.42 sq. m.
Max. Rotor Speed	400 RPM
Tip Speed Ratio	2.3
Speed Control	Redundant Electronic
Wind Tracking	Instantaneous
Generator	High Efficiency Brushless Permanent Magnet
Inverter	Inverter Custom Integrated Grid Tie 120 VAC 60 Hz
Inverter Certification	Meets IEEE 1547; UL 1741
Performance Monitor	Integrated Wireless Zigbee Modem
Cut-in Wind Speed	8 mph 3.6 m/s
AEP Avg. Winds Speed	12 mph 5.4 m/s
IPR Rated Winds Speed	25 mph 11.2 m/s
Survival Wind Speed	105 mph 47 m/s
Monopole/Structure Material	Recycled High Grade Steel
Paint	2 Coats, Corrosion -Resistant Industrial Grade Paint
Coatings	Rust Veto & Zinc Olive Drab
Warranty	5 year limited warranty

*Notes: AEP is based on assumptions, including a Rayleigh wind speed distribution and sea level air density.





Clean. Simple. Smart.

Standard 1.2 kW

The Windspire® wind turbine is an aesthetically designed vertical axis wind turbine that operates quietly while generating electricity for immediate use in your home or business.

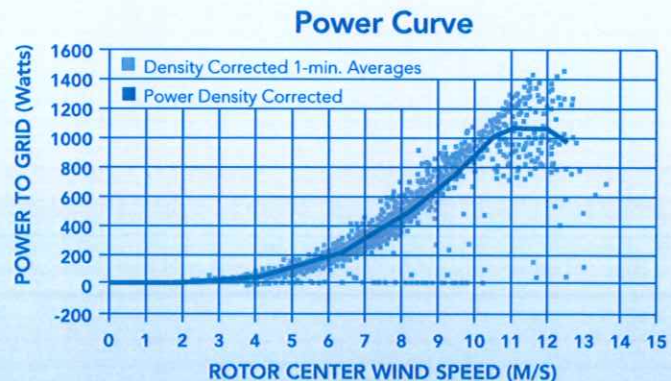
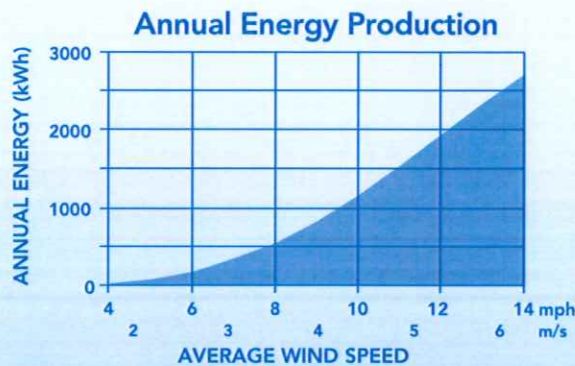
The Windspire is also the lowest priced alternative energy appliance within the one kilowatt range on the market. And it's made in the USA.

Windspire invites everyone to explore the potential of clean energy from the natural power of the wind.

WINDSPIRE® SPECIFICATIONS - STANDARD 1.2 KW UNIT

Annual Energy Production (AEP)	2000 kWh ¹	General
Instantaneous Power Rating (IPR)	1.2 kW (1200 watts) ²	
Standard Unit Height	30 ft 9.1 m (pole extension options available)	
Total Weight	624 lb 283 kg	Rotor
Unit color	Soft Silver	
Sound output	6 dBA above ambient (15 mph wind, 6 ft from base)	
Warranty	5 Year Limited	Electronics
Rotor Type	Vertical Axis - Low Speed Giromill	
Rotor Height / Diameter	20 ft 6.1 m / 4 ft 1.2 m	
Swept Area	80 sq ft 7.43 sq m	Ratings
Max Rotor Speed	400 RPM ³	
Tip Speed Ratio	2.3	
Speed Control	Redundant Electronic	Construction
Wind Tracking	Instantaneous	
Generator	High Efficiency Brushless Permanent Magnet	
Inverter	Inverter Custom Integrated Grid Tie 120 VAC 60 Hz	
Inverter Certification	Meets IEEE 1547.1; UL 1741	
Performance Monitor	Integrated Wireless Zigbee Modem	
Cut-in Wind Speed	8 mph 3.6 m/s	
AEP Average Wind Speed	12 mph 5.4 m/s	
IPR Rated Wind Speed	25 mph 11.2 m/s	
Survival Wind Speed	105 mph 47 m/s	
Foundation	Poured Concrete	
Foundation Size	2 ft diameter by 6 ft base ⁴	
Rotor Material	Recycled Aircraft Grade Extruded Aluminum	
Monopole/Structure Material	Recycled High Grade Steel	
Paint	2 Coats, Corrosion-Resistant Industrial Grade Paint	
Coatings	Rust Veto & Zinc Olive Drab	

Notes: 1: AEP is based on the power curve and standard assumptions including a Rayleigh wind distribution and sea level air density. 2, 3: Performance is based on initial field test data. Final testing is currently underway. 4: Foundation size may vary for non-standard soil conditions or non-standard heights.



MADE IN USA



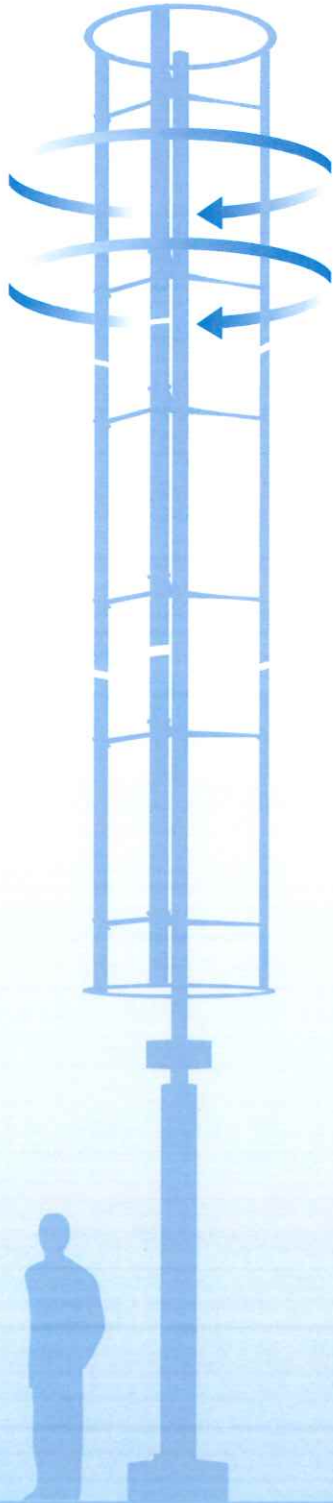
5450 Louie Lane, Reno NV 89511 · 775.857.4888 · www.mariahpower.com



Standard 1.2 kW

Clean. Simple. Smart.

FREQUENTLY ASKED QUESTIONS



What is the difference between Energy and Power?

At wind speeds greater than 8 mph, the Windspire will begin producing power, which is measured in Watts (W) or kilowatts (kW). Power output jumps up and down as quickly as the wind changes speed, so the industry measures output over time in kilowatt-hours (kWh) which is how many watts of power are consumed over a full hour. Your electric company charges you for energy usage based on a rate/kWh. Over the course of a year, the 1.2kW Windspire will produce approximately 2000 kWh in 12 mph average winds to help offset the energy you require from the electric company. This is approximately one-quarter of the energy usage of an average home.

How Much Does a Windspire® Cost?

In the US, a complete Windspire® wind turbine typically costs between \$9000 and \$12,000, fully installed. After rebates the cost can be as low as \$3800.

Are There Tax Credits Available?

The Federal Government provides a 30 percent tax credit for the total cost of the unit, including installation. Many state and local municipalities also offer rebates, as do local power companies.

Is it Safe for Birds?

The Windspire® rotates at a lower speed than most wind turbines and is more visible to flying birds. So far, we have had no reports of collisions – and we have had one report of a nest built under an active unit.

Are There Specific Requirements for Potential Customers?

A Windspire® site requires land with unobstructed wind and adequate space for installation. The Windspire® also needs at least class two winds – ideally class three (an average of 12 mph) – and a tie to the power grid.

Is the Windspire a Grid-Tie or Off-Grid Product?

The currently available Windspire® is grid-tie, which requires the unit to be tied into the local utility grid. An off-grid version of the Windspire® is in development and will be available soon.

Can I sell electricity back to the grid?

Some utilities offer net metering agreements that allow credit for, or in a few places the sale of excess power back to the grid using feed-in tariffs.

Is the Windspire® Independently Tested and Certified?

The Windspire® is independently tested at Windward Engineering in Spanish Forks, Utah. This testing allows customers to know what level of power production to expect from specific wind ranges. The Windspire® received ETL certification as of March 2008 for the U.S. and Canada, which includes UL and IEEE testing.

What Is the Maintenance?

The Windspire® requires no scheduled maintenance, with moving parts designed for a 20+ year life and ball bearings that are greased for life. Durable construction enables it to produce power for 20+ years. A dual-layer paint coat, rust proof spray, and zinc plating are applied for weather protection.

Installation is Simple and Fast!



1. Set Concrete



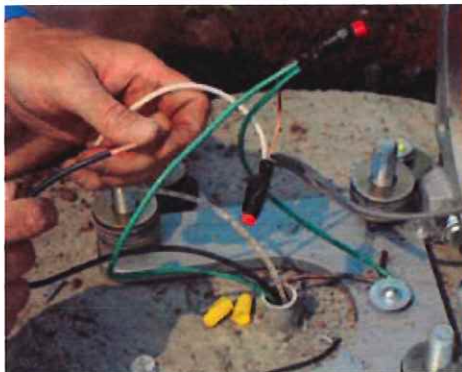
2. Install Base Pole



3. Install Top Pole



4. Assemble Rotor



5. Connect Electronics



6. Erect Windspire

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[Windspire Overview](#)[Technical Info](#)[Buying Guide](#)[Windspires In Action](#)[Overview / Advantages](#)[Applications](#)[Installation & Service](#)[Accessories](#)

Windspire Applications: The Windspire is Ideal for Many Settings

Windspire® wind turbines were aesthetically designed to blend in easily with a variety of environments. From small retail locations, from museums to community gathering spaces, Windspires are making a statement. Here is a sampling of some current uses of the Windspire, as well as some ideas in concept:

Residential

Use one or more Windspires to power your home. Place them in the back yard, or display them in front of your path, driveway, or your entry, using Windspires as power-generating pillars. Great for homes in the country, but appropriate for many suburban and urban settings with access to wind.

Business

Set up an array of Windspires in front of your building to provide you with electricity. Use this attractive form of energy to visibly display your corporation's values and environmental responsibility, while lowering your energy costs. For commercial buildings with the right structural attributes, you may consider placing Windspires on raised patios.

Agriculture

Whether it's for pumping water or powering greenhouse lights, whether as a compliment to your grid electricity solution, the Windspire is simple to install and an economical wind power solution.

Remote Power

Off-grid needs for power include charging cell towers around the world, and providing for basic power needs in remote countries, such as lighting, cell phones charging for communication needs, or water filtration to ensure clean water.

Kinetic Sculptures

Windspires don't just make power, they also look fantastic, especially when placed in a group. For resorts, hotels, etc. A group of Windspires arranged artistically in an array and painted with custom colors, can form a novel and eye-catching renewable energy that provides usable electricity, visual appeal, and a strong message of sustainability to your outdoor display to a new level by incorporating Windspires.

Windspire Videos

Watch the Windspire Wind Turbine in Action

Putting People to Work Building Wind T

Windspire Wind Turbine in West Sacramento

Chesapeake home among first to install



Windspire® featured on Extreme Makeover: Home Edition



In its network television debut, the Windspire® wind turbine was installed at the "Extreme Makeover: Home Edition" project in Indianapolis, on the show's season finale 2-hour episode.

Click [here to watch the Builder Cam footage](#) of the McFarland Family's new home.

Footage of the Windspire begins at minute 5:45.

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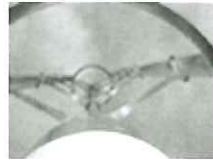


Windspire Overview

Technical Info

Buying Guide

Windspires In Action



Overview / Advantages

Applications

Installation & Service

Accessories

Windspire Overview

Brochure

Specs

Affordable, attractive, and ultra quiet, the Windspire® wind turbine gives you the power to create clean energy wind just outside your door. At only 30 feet tall and 4 feet wide, the Windspire wind turbine is distinguished by propeller-free design and ultra quiet operation. Designed for use where you live and work, the Windspire is at homes, small businesses, schools, museums, parks, and much more.

Power from Wind

The Windspire® wind turbine generates power when wind blows against its vertical airfoils causing them to spin, then converted to AC electricity and is immediately available to power your home grid and all the appliances that use electricity from it, such as lights, refrigerators, and air conditioners. While the technology behind the Windspire basic premise is simple: the stronger the wind the more power it will generate.

Advanced Technology

The Windspire® wind turbine was designed from the ground up as a complete system, both to maximize electrical and mechanical efficiency, and to minimize the system cost for our customers. The patented technology includes generator, integrated inverter, hinged monopole, and wireless performance monitor. The 1.2 kW (1.2 kilowatt) Windspire will produce approximately 2000 kilowatt hours (kWh) per year in 12 mph average winds. The Windspire includes WindSync wireless monitoring software so you can check your power production in real time.

Affordable

Starting at \$6,500 for the complete system (before installation) the Windspire® is priced much lower than conventional wind turbines and other alternative energy options. The price includes the poles, inverter, wireless performance monitor, and hinged monopole, so there are no expensive extras to buy. After deducting a 30% federal tax credit (available in many areas) and local rebates that are available in some areas, your net cost is even lower. The average payback is under 10 years.

High Quality

Rugged yet simple construction means durability and low maintenance for customers. The Windspire® wind turbine is designed to operate for 20 years or more. It is made with durable, corrosion-protected steel and aircraft grade aluminum. It features quality oversized bearings and a very simple mechanical structure, and rated to withstand high winds (up to 115 mph) and ice. The Windspire is made in the USA (Michigan), with extensive quality control measures in place to ensure you receive a quality product.

Clean Energy

The Windspire® wind turbine generates energy from a clean, natural, and inexhaustible source, replacing petroleum-based energy.

Key Features:

- Clean Renewable Energy
- Complete Wind Power System
- Sleek, Attractive Design
- Cost Effective
- Silent Operation
- Made in the USA
- Made from Recycled Materials
- Low Profile, only 30 Feet Tall
- Annual Energy - 2000+ kWh/yr
- Grid-Ready, Plug 'n Produce™
- Integrated Inverter
- High Efficiency Generator
- Hinged Monopole Makes Installation Simple
- Wireless Performance Monitor
- Maintenance-Free
- Independently Tested
- IEEE & UL Certified
- Popular Science "Best of What's New 2008" Award



Power to Inspire™

Clean Energy for You

Affordable, attractive and ultra-quiet, the Windspire™ wind turbine gives you the power to create clean energy from the natural wind just outside your door. At only 30 feet tall and 6 feet wide, the Windspire wind turbine is distinguished by its sleek propeller free design and ultra-quiet operation. Designed for use where you live or work, the Windspire is currently powering homes, small businesses, schools, museums, parks, and much more.



Power from Wind

The Windspire™ wind turbine generates power when the wind blows against its vertical airfoils causing them to spin. This power is then converted into AC electricity and is immediately available to power your home and all the appliances that draw electricity from it, such as lights, refrigerators, and air conditioning. While the technology behind the Windspire is complex, the basic premise is simple: the stronger the wind, the more power it generates.

Wind & Site Requirements

The Windspire™ wind turbine was designed to operate in areas with minimum average wind speeds of at least 10 mph (4.3 m/s) though it works best where average winds exceed 12 mph (5.4 m/s). Wind speeds vary by location, even within a property, and generally preferred sites are clear of any nearby obstructions such as tall trees or buildings. Your Windspire Dealer can discuss siting guidelines with you in more detail.

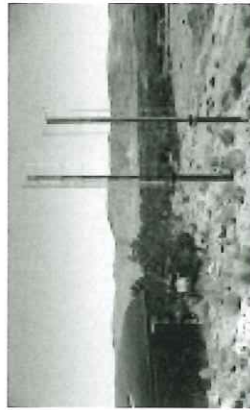


Installation is Quick & Easy

Simple to install and use, the Windspire™ wind turbine comes as a complete system with a high-efficiency generator, integrated inverter, hinged monopole, and wireless performance monitor. Once your foundation is properly laid, your Windspire Dealer can install your new Windspire in as few as three hours without the use of heavy machinery.



Credit: Dennis Piller



Be Smart & Save Money

Starting at \$4,500 for the complete system (before installation) the Windspire™ is priced much lower than comparable wind turbines and other alternative energy options. Independent tests confirm the Windspire will produce approximately 2,000 kilowatt hours per year in 12-mile per hour average winds. This equates to around a quarter of the average energy needs of a residential home.

Depending on wind conditions, electricity rates, and local incentives, the Windspire can pay for itself in as little as five years. The U.S. Federal Government provides a 30% tax credit off the total cost of the Windspire including installation fees. Other local incentives may be available in your area.

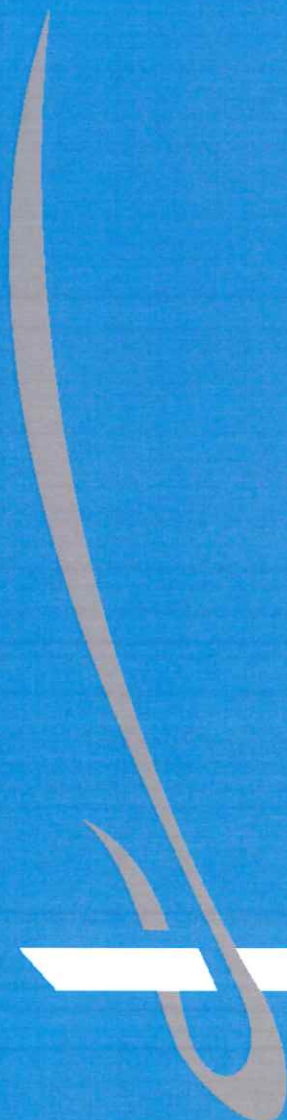


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5450 Louise Lane,
Reno, NV 89511
775-857-4888

Windspire

Clean. Simple. Smart.

2009 design manual



Winddispire

VERTICAL WIND TURBINE

A New Approach to Wind Power







STRATEGIES FOR INTEGRATING WINDSPIRE

UNDERSTAND WIND

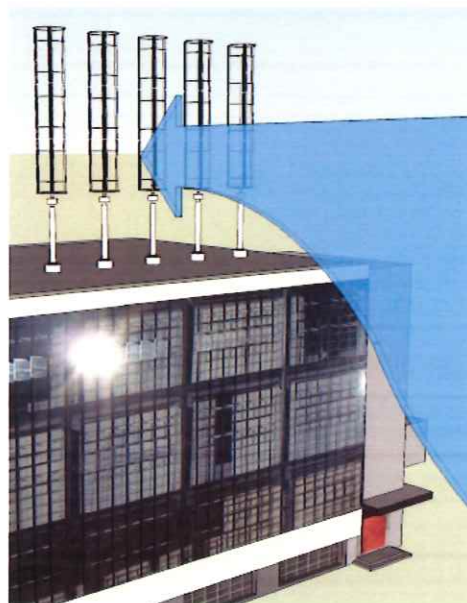
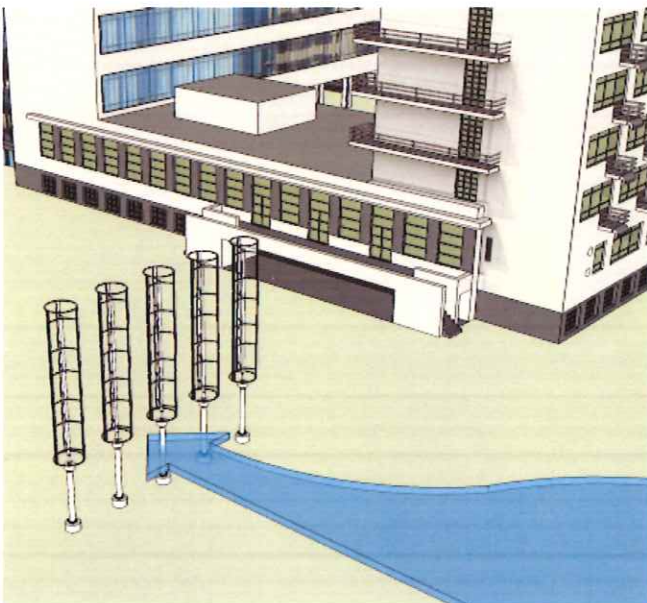
Assess airflow at a site and how to capture its energy.

OPTIMIZE SITING

Find the best location on a site for a Windspire installation, or design a site to maximize available wind resources.

SELECT THE RIGHT WINDSPIRE

Windspire® vertical wind turbines can be customized in height, color and offer a range of power outputs. A modular platform allows selection from a variety of rotor and airfoil combinations depending on local winds.



WIND AND AIRFLOW BASICS

To site a Windspire® for best power production, it is important to understand the conditions at a site, including:

1. Available wind resource
2. Direction of the prevailing winds
3. Locations of obstructions, both existing and predicted

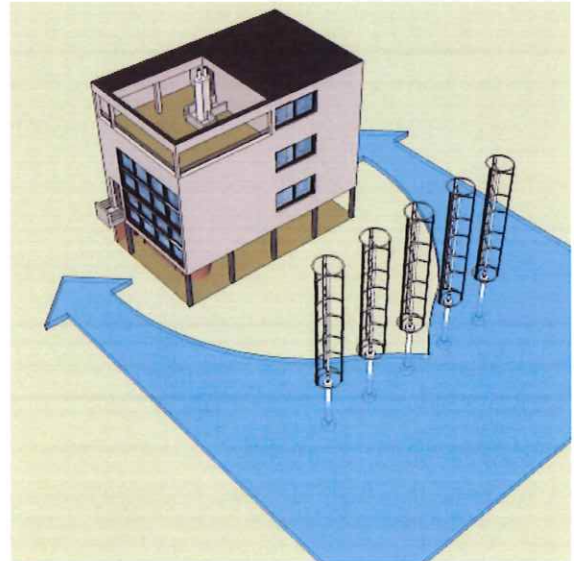
Estimating a range for annual average wind speeds is possible by several sources, including wind maps, area weather stations, visual reference scales and local knowledge. These tools should serve as general guides, remembering that specific conditions at the proposed site could vary greatly. A year-long anemometer study is most accurate, but costs ranging from \$2,000 - \$5,000 can be prohibitive and time-consuming.

Knowing the direction of local prevailing winds is important to help find the best orientation and avoid turbulence from obstacles. Turbulence slows down airflow and reduces power production.

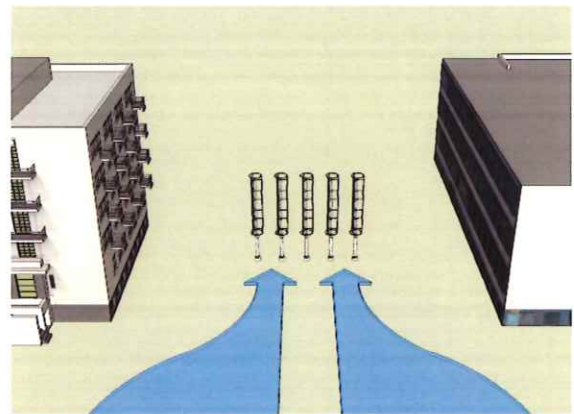
The wind has the most potential power where it is least obstructed, which is often the highest point on the site. Wind speed increases with height, and gaining even a small increase in velocity will result in exponentially better power production. A minor 10% increase in wind speed will create 33% more available power.

Where obstacles block clear access to the wind, Windspire wind turbines can be installed higher on base pole extensions or even on top of a building. This should be coordinated with local zoning height restrictions.

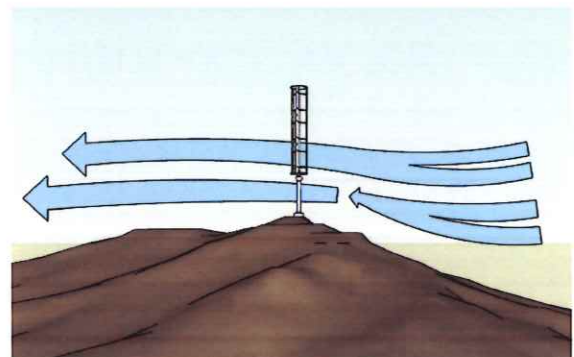
Complex terrain requires more careful consideration. Siting on the windy side of a hill will allow more access to prevailing winds than in a gully or on the leeward (sheltered) side of the same hill.



Wind splits long before reaching an obstacle, creating pockets of dead air upwind of the obstacle and a turbulent vacuum on the downwind side of the obstacle.

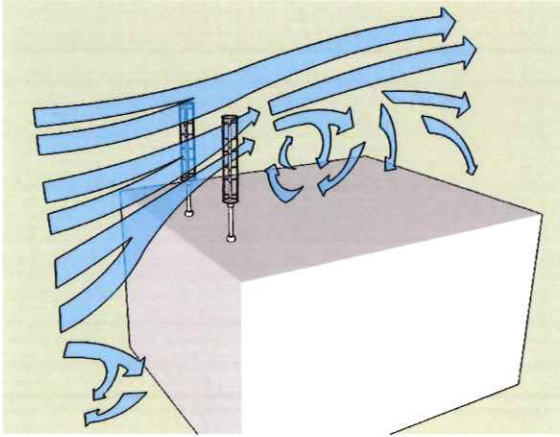


Looking for or creating areas with accelerated airflow can increase the power output of a Windspire installation.

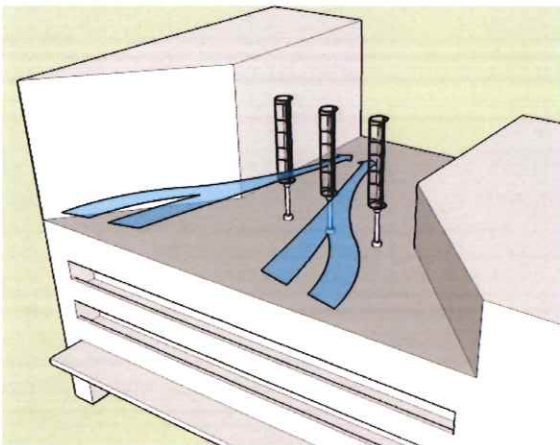


More factors are considered for complex terrains.

BUILDING AND SITE INTEGRATION



Airflow compresses at the leading edge of a building. As wind travels over the building, this compression can create an accelerated airstream with potentially increased power. Once past the leading edge, airflow separation occurs resulting in eddies and stagnant areas. Windspires on buildings should be located at the highest and clearest areas on the side of the building facing the prevailing wind.



Shaping a building to create conditions for increased airflow can result in significant power increases over the surrounding environment. Computational fluid dynamic modeling combined with architectural 3-D modeling can assist in predicting these unusual airflows early in the design process.

There is significant advantage to be had in a wind energy project by developing a building or site for wind power early in the design process. Planning buildings to funnel air toward a Windspire® installation can increase project viability while offering unique architectural opportunities.

In locations that might preclude a ground installation, Windspires may be incorporated into a building under the right circumstances.

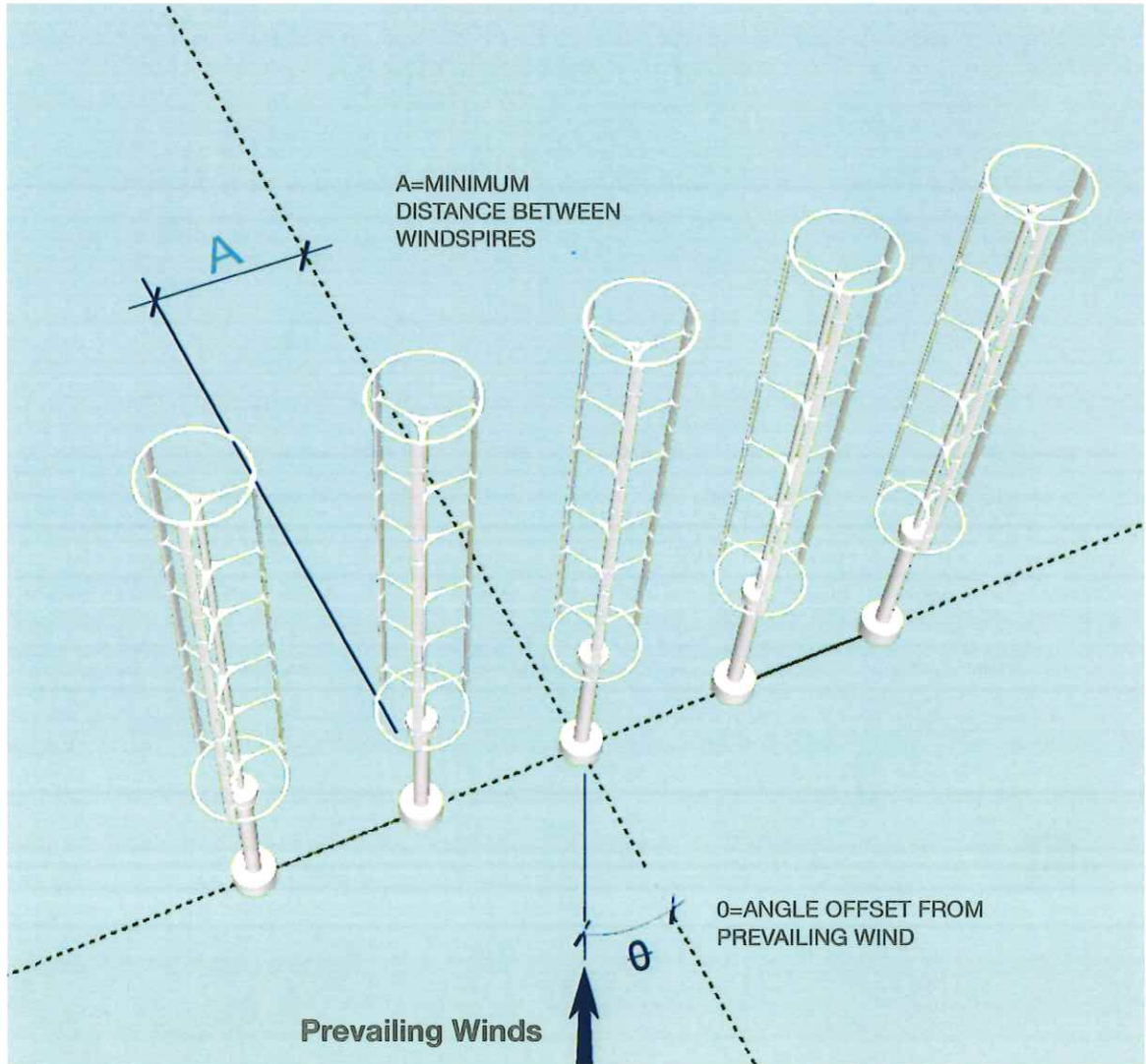
The building structure will have to be sufficiently rigid to accommodate for the added moment of the wind turbine. Typically, heavy steel frame and concrete structures will be the most suitable. Parking garages are often ideal for a Windspire installation because they allow easy access to the mounting structure.

Roof-top Installations should be located on the leading edge of a building facing prevailing winds. This offers the best possibility of capturing the wind that is being compressed and accelerated as it passes over the building.

PERFORMANCE SITING

When wind power is considered early in the planning stages, it is possible to orient buildings on a site, or even shape buildings themselves, to accelerate existing airflows. Windspire technology, based on a flexible platform, can be incorporated into the design for maximum power generation.

Identifying areas of accelerated airflow unique to a specific site can also help locate a Windspire wind turbine installation and boost a project's performance. Pre-existing anomalies, such as funnel effects from valleys, building orientations, or city streets, may create currents with wind speeds higher than in surrounding areas.



SITING WINDSPIRES

In order to successfully site a Windspire® installation, designers should be aware of the prevailing wind and relationships to obstacles at and around the site. Siting multiple Windspire wind turbines requires additional consideration regarding the drag (reduced airflow) that one unit may have upon another.

CLEARANCES BETWEEN WINDSPIRES

Windspires should be placed in series according to their orientation to the prevailing winds.

Angle offset from wind	Distance required (feet)
0°	8'
15°	8.3'
30°	9.2'
45°	11.2'
60°	15.4'
75°	26.5'
90°	50'

Key Features:

- Clean Renewable Energy
- Complete Wind Power System
- Sleek, Attractive Design
- Cost Effective
- Silent Operation
- Made in the USA
- Made from Recycled Materials
- Low Profile, only 30 Feet Tall
- Annual Energy ~ 2000+ kWh/yr
- Grid-Ready, Plug 'n Produce™
- Integrated Inverter
- High Efficiency Generator
- Hinged Monopole Makes Installation Simple
- Wireless Performance Monitor
- Maintenance-Free
- Independently Tested
- IEEE & UL Certified
- Popular Science "Best of What's New 2008" Award

Wind to Power Power to Inspire™

Clean Energy for You

Affordable, attractive and ultra quiet, the Windspire® wind turbine gives you the power to create clean energy from the natural wind just outside your door. At only 30 feet tall and 4 feet wide, the Windspire wind turbine is distinguished by its sleek propeller-free design and ultra-quiet operation. Designed for use where you live or work, the Windspire is currently powering homes, small businesses, schools, museums, parks, and much more.



Installation is Quick & Easy

Simple to install and use, the Windspire® wind turbine comes as a complete system with a high-efficiency generator, integrated inverter, hinged monopole, and wireless performance monitor. Once your foundation is properly laid, your Windspire Dealer can install your new Windspire in as few as three hours without the use of heavy machinery.



Credit: Devon Bank

Power from Wind

The Windspire® wind turbine generates power when the wind blows against its vertical airfoils causing them to spin. This power is then converted into AC electricity and is immediately available to power your home grid and all the appliances that draw electricity from it, such as lights, refrigerators, and air conditioners. While the technology behind the Windspire is complex, the basic premise is simple: the stronger the wind the more power it generates.

Wind & Site Requirements

The Windspire® wind turbine was designed to operate in areas with minimum average wind speeds of at least 10 mph (4.5 m/s) though it works best where average winds exceed 12 mph (5.4 m/s). Wind speeds vary by location, even within a property, and generally preferred sites are clear of any nearby obstructions such as tall trees or buildings. Your Windspire Dealer can discuss siting guidelines with you in more detail.



Be Smart & Save Money

Starting at \$6,500 for the complete system (before installation) the Windspire® is priced much lower than comparable wind turbines and other alternative energy options. Independent tests confirm the Windspire will produce approximately 2,000 kilowatt hours per year in 12-mile per hour average winds. This equates to around a quarter of the average energy needs of a residential home.

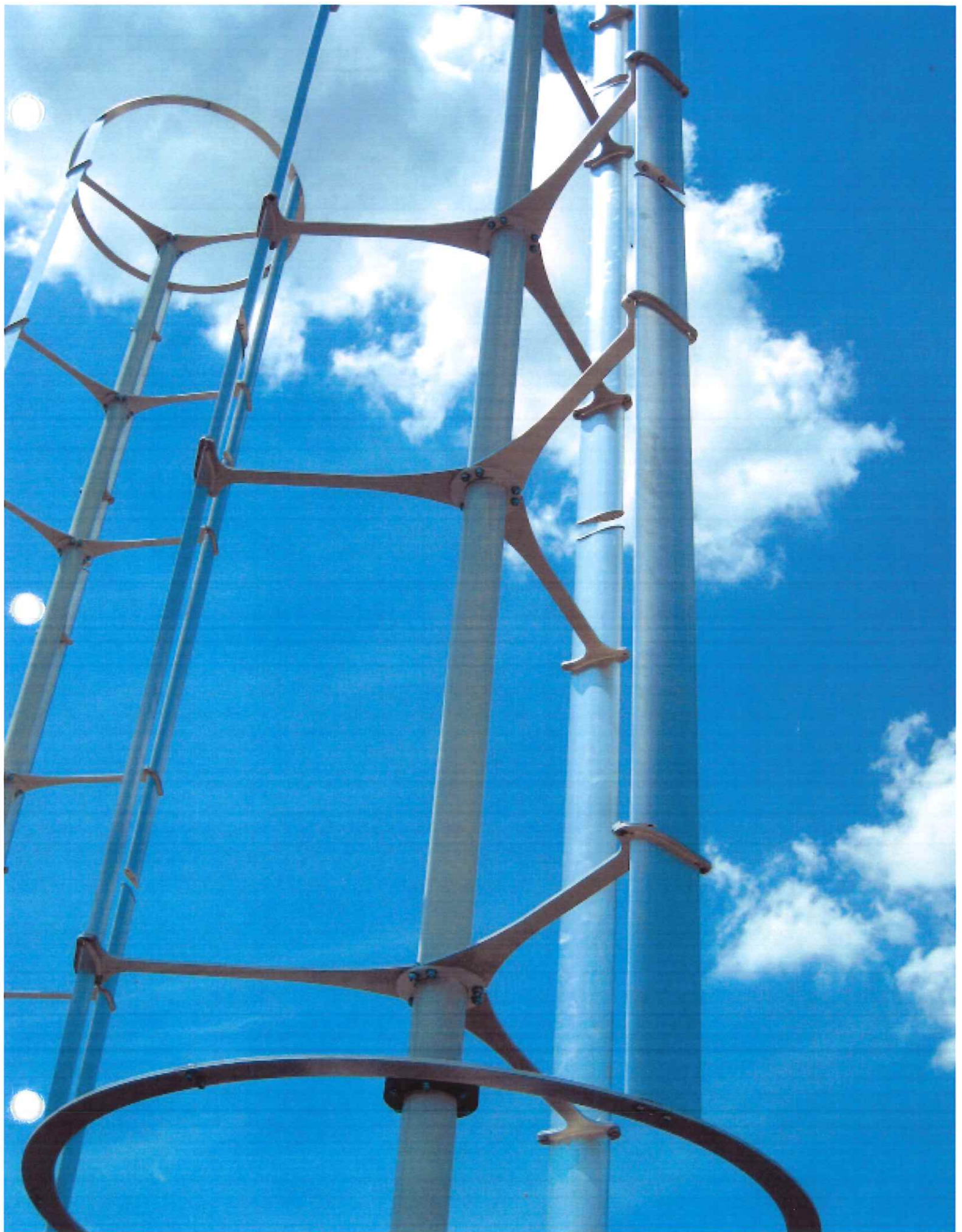
Depending on wind conditions, electricity rates, and local incentives, the Windspire can pay for itself in as little as five years. The U.S. Federal Government provides a 30% tax credit off the total cost of the Windspire including installation fees. Other local incentives may be available in your area.



www.mariahpower.com
5450 Louie Lane,
Reno, NV 89511

775-857-4888

Windspire
Clean. Simple. Smart.



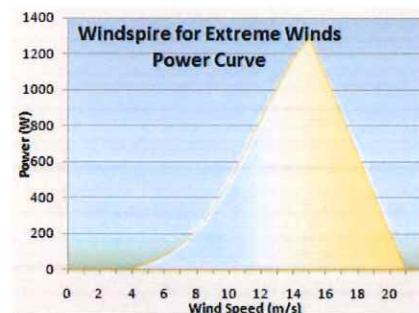
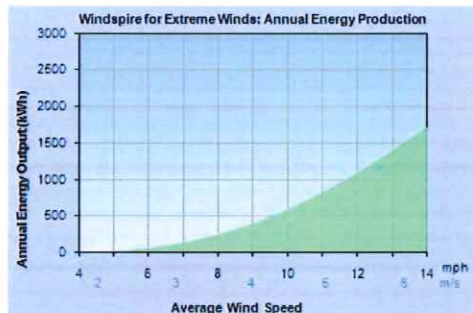
1.1 kW Extreme Winds Windspire®

Specifications

Annual Energy Production (AEP) @ 15 mph	2050 kWh*
Instantaneous Power Rating (IPR)	1.1 kW (1200 watts)*
Maximum Power at 30 mph (13.4 m/s)	1.3 kW (1300 watts)*
Standard Unit Height	23 ft 7.1 m
Sound Measurement	6 dB above ambient (15 mph @ 6ft from base)
Total Weight	567 lb 257 kg
Rotor Type	Vertical-Axis Low Speed Giromill
Rotor Material	Aircraft Grade Aluminum
Rotor Height/Diameter	13.2ft/4ft (4m/1.2m)
Swept Area	52.7 sf / 4.89 sq. m.
Max. Rotor Speed	400 RPM
Tip Speed Ratio	2.3
Speed Control	Redundant Electronic
Wind Tracking	Instantaneous
Generator	High Efficiency Brushless Permanent Magnet
Inverter	Inverter Custom Integrated Grid Tie 120 VAC 60 Hz
Inverter Certification	Meets IEEE 1547; UL 1741
Performance Monitor	Integrated Wireless Zigbee Modem
Cut-in Wind Speed	8 mph 3.6 m/s
AEP Avg. Winds Speed	15 mph 5.4 m/s
IPR Rated Winds Speed	25 mph 11.2 m/s
Survival Wind Speed	168 mph 47 m/s
Monopole/Structure Material	Recycled High Grade Steel
Paint	2 Coats, Corrosion -Resistant Industrial Grade Paint
Coatings	Rust Veto & Zinc Olive Drab
Warranty	5 year limited warranty



*Notes: AEP is based on assumptions, including a Rayleigh wind speed distribution and sea level air density.





Proposed Winospire at DiMillos