UPSTREAM WATCH MOTION (3-1-21) TO AUGMENT RECORD, OR, IN THE ALTERNATIVE, REMAND TO THE BELFAST PLANNING BOARD FOR FURTHER PROCEEDING
SUBMISSIONS ON ISSUE OF ON-SITE AND OFF-SITE ELECTRICAL SERVICE

NOTE: This is a merged file that contains the following 6 documents.

Upstream Watch has submitted 6 documents regarding this Motion:

C1 - March 1, 2021 Request to Augment Record or Remand to the Planning Board on the Issue of On-Site and Off-Site Electrical Service. - 4 Pages

C2 - Appendix 1. Upstream prepared record of selected discussion at 10/9/2019. 12/18/2019, 1/15/2020, 1/22/20, 10/28/2020, 11/4/2020, 12/03/2020 and 12/09/2020 Planning Board meetings, and a selected extract from a 10/19/2020 email from David Bond, Planning Board member, and a 10/21/2020 email from Geoff Gilchrist, Planning Board member. - Total of 10 pages.

C3 - Memorandum dated February 28, 2021 from Mike Lannan to Amy Grant regarding Nordic Power Requirements. - Total of 26 Pages

C4 - Letter dated January 21, 2020 from Richard Hevey, Senior Consultant, CMP to Harry Lanphear, Administrative Director, Maine Public Utilities Commission - 2 pages.

C5 - Document No. 2011-00138 from DNV-GL, an Update Attachment Midcoast Need - 7 pages.

C6 - Document entitled 'Redacted: Central Maine Power Midcoast Section 80 Non-Wires Analysis Report, Document No. 2011-00138. Report dated September 21, 2020 prepared by DNV-GL - Total of 26 pages.

Document C1
4 Pages

CITY OF BELFAST, MAINE

ZONING BOARD OF APPEALS

March 1, 2021

APPEAL OF UPSTREAM WATCH FROM DECISIONS OF THE BELFAST PLANNING BOARD CONCERNING THE APPLICATIONS OF NORDIC AQUAFARMS, INC.

Application for:

1. Site Plan Approval

MOTION TO AUGMENT RECORD OR, IN THE ALTERNATIVE, REMAND TO THE BELFAST PLANNING BOARD FOR FURTHER PROCEEDINGS NECESSARY TO EITHER:

a. COMPLETE THE RECORD IN THE EVENT THE BOARD FINDS IT UNABLE TO RENDER A DECISION DUE TO THE ABSENCE OF CRITICALLY IMPORTANT FACTUAL INFORMATION; OR

b. REMAND FOR FURTHER PROCEEDINGS CONSISTENT WITH THE ORDER OF THE ZONING BOARD OF APPEALS.

Appellant herein, Upstream Watch ("Upstream"), respectfully Moves the Belfast Zoning Board of Appeals to remand the matter to the Planning Board and to direct or provide an opportunity for the Planning Board to notify other affected Mid-Coast towns of the opportunity to participate and, as appropriate, augment its record, as follows and for the reasons set forth herein.

ON SITE AND OFF-SITE ELECTRICAL SERVICE

From the records of the Public Utilities Commission, it is clear that if Central Maine Power (CMP) approves Nordic's request for 28 MW of power CMP's "Midcoast" area will effectively be a "NO GROWTH" area because CMP power supply will have been entirely consumed.

CMP's Midcoast area runs from the "Boothbay region" on the south, through the "Camden-Rockland region" up to and through the "Belfast region". All three regions are served by CMP "Section 80" the capacity of which will be entirely consumed if not exceeded by Nordics request for power. The towns in the Boothbay region, Camden Rockland region and Belfast region will have been denied growth opportunities without their knowledge or participation. At the very least this matter should be remanded to the Belfast Planning Board with instruction to place all of the towns in CMP's Boothbay region, Camden-Rockland region and Belfast region on notice of the proceedings so that they might have an opportunity to participate and protect the future of their towns.

This information was known by Nordic and is reflected in the Maine Public Utility Commission records as early as January 2020. Yet Nordic declined to share this information with Planning Board even though specifically requested. See Appendix 1. And although Nordic hid this information from the Planning Board, the Planning Board anticipated the problem reflected by its finding contained in the condition 12.2 attached to the site plan approval.

> ***12.2 Off-Site Electrical Service****. Based on preliminary information provided by Nordic to the Belfast Planning Board, Nordic's operations may require extensive off-site improvements to Central Maine Power's (CMP) facilities to address electrical demands associated with Nordic's facilities and operations. To date, however, Nordic has provided no specific information regarding the extent of improvements required to CMP's facilities, how such improvements (or lack thereof) could impact electrical service to Belfast and surrounding communities, when such improvements may be constructed and who will pay for such, and how such improvements may interface with Nordic's on-site power generation facilities. Further, the Minor Air Emissions Permit issued to Nordic by the Board of Environmental Protection establishes maximum limits on the amount of power (limits on amount of emissions that can occur based on amount of fuel used) that Nordic can produce from its on-site generators, meaning that Nordic, as identified in its Site Plan application, will be reliant on CMP for the majority of its power.*
>
> *Planning Board approval of the Nordic project is predicated on information provided in the Nordic application and testimony from Nordic representatives to the Board, including: Nordic shall rely on CMP for the majority of its power, improvements are required to CMP's facilities to support Nordic's operations, and Nordic's on-site power generation will occur within the parameters established in the BEP Minor Air Emissions Permit. As only limited information has been provided to date to the Planning Board regarding Nordic's use of electricity, Nordic, within one year of the date of issuance of a Site Plan Permit, shall provide information to the Code and Planning Department that identifies the following: off-site improvements that CMP must make to support the Nordic facility; how and when CMP will make required improvements; the party responsible for the cost of making required improvements; how Nordic's on-site electrical power*

generation will interface with CMP's service; and the degree to which Nordic will rely on power provided by CMP. The Board anticipates that most of this information can be provided through documentation provided by CMP to the Public Utilities Commission.

58 The Code and Planning Department shall review the above information, determine if the identified approach is consistent with the Nordic permit application submitted to the Planning Board, and report its findings to the Planning Board. In particular, any proposal by Nordic to change the classification of Air Emissions Permit issued to Nordic by the Board of Environmental Protection shall require Nordic to submit an amendment to the City Site Plan Permit for Board review and approval.

12.3 On-Site Power Generation. Nordic, as identified in 12.2 above, has obtained a Minor Air Emissions License (Permit) from the Department of Environmental Protection to operate a series of 8 on-site generators to provide both peak shaving and emergency power for Nordic's operations. The Planning Board, recognizing that the City has minimal definitive standards to regulate air emissions, has determined that it largely will rely on the above DEP Permit to regulate specific air emissions associated with Nordic's on-site power generation activities, and by extension, regulating the amount of power (amount of fuel used) that Nordic can operate its on-site power generation facilities. And, as identified in 12.2 above, any proposal by Nordic to change the classification of the DEP Air Emissions license shall require the review and approval of the Belfast Planning Board as an amendment to this Site Plan Permit. Further, any proposal by Nordic to increase the height of the exhaust pipes (chimneys) to greater than 70 feet, shall require review and approval by the Planning Board as an amendment to this permit application to determine if the proposed increase in height has any adverse impact on air quality, air emissions and odors, and to determine if there is any adverse impact on public views.

By the above finding, the Planning Board recognized that it had not been provided competent information by which it could conclude that Nordic had obtained or could obtain an adequate supply of electrical power. And from the Maine Public Utility Commission records it is clear that Nordic knew about this problem and refused to share the truth with the Planning Board or to honestly and candidly respond to questions by members of the Planning Board. This behavior must not be rewarded.

A detailed analysis of the electrical power problem faced by Nordic and the impact that problem and its resolution will have on the towns in the Midcoast region, all without their knowledge, is described in detail in a memorandum prepared by Michael Lannan, PE, President of Tech Environmental Services, Inc., attached hereto.

The consequence of condemning the towns of the Midcoast region to “no growth” without their knowledge or participation, for a period of 5 to 15 years depending on the speed at which CMP in the Maine Public Utilities Commission determines to replace” section 80”, is severe if not

unconscionable. The issue of the availability of electric power to serve Nordic and its consequences on the Midcoast region must be remanded to the Planning Board with notice to all the affected towns so that those towns might have a voice in planning their future.

Respectfully submitted,

UPSTREAM WATCH

By David B. Losee, its attorney

7 Highland Ave.

Camden, ME 04843

David@loseelaw.com

860-707-3215

Maine bar number: 006500

Document C2
10 Pages

APPENDIX 1

p. 641, 10/9/2019, #5

02:39:01 fish welfare during the power outages
02:39:04 but we do anticipate using them on a
02:39:06 regular basis as well
02:39:08 why would you just not take power off
02:39:10 the electric grid
02:39:12 we we will um all of our power on the
02:39:15 normal basis will be coming from the
02:39:17 grid
02:39:18 but the way it's set up if we make
02:39:20 agreements
02:39:21 in such a way with the electrical
02:39:24 supplier we can reduce our loads during
02:39:27 certain times of the day
02:39:28 and it keeps our prices down so it's a
02:39:30 lot cheaper for us

P. 642, 10/9/2019, #5
02:40:43 your
02:40:43 grid electricity or your solar panels
02:40:47 i'm just i'm surprised to see that
02:40:50 there is diesel power generation for
02:40:53 electricity
02:40:54 uh in this project i know it's uh
02:40:57 you're meant to be uh you're aiming to
02:40:59 be a replacement for
02:41:01 you know like the dirtier net pen type
02:41:03 situation it seems like
02:41:05 diesel generation
02:41:09 in this day and age like is there not a
02:41:11 better alternative it doesn't
02:41:12 it doesn't produce that you don't have
02:41:14 to scrub the emissions

02:41:16 well the the primary answer to that is
02:41:19 as several people have mentioned in
02:41:21 previous meetings
02:41:23 where you know in a situation where we
02:41:25 could lose power for
02:41:26 five days or more it's happened

02:41:28 batteries won't give us that kind of
02:41:30 time

02:42:12 like how much is it just sort of saving
02:42:14 money to be
02:42:15 to be using diesel power i mean are you
02:42:17 instantly using diesel power on every
02:42:19 single day
02:42:20 maybe every single day there's a peak of
02:42:21 electricity prices right it won't they
02:42:23 won't be every day but it'll be
02:42:24 it'll be most days and this is actually
02:42:28 a system that's set up by the great
02:42:30 because of
02:42:31 their infrastructure needs they're
02:42:34 incentivizing people
02:42:36 customers to do this because it is the
02:42:39 best way for them to be able to manage
02:42:41 their grid
02:42:42 unfortunately most customers don't have
02:42:44 the ability to have
02:42:45 large generators so since we needed them
02:42:48 for for power generation during
02:42:51 emergencies
02:42:52 we looked at this option and said we've
02:42:54 got them sitting there it makes a lot of
02:42:55 sense to use them in this way that the
02:42:57 power company
02:42:58 incentivizes

right i see how it makes
02:43:01 sense financially i'm just
02:43:03 um trying to find out if there's a
02:43:05 better way that doesn't involve
02:43:08 those days turning on different
02:43:09 communities i mean
02:43:12 you know the the idea is we're looking
02:43:14 at
02:43:15 minimal use on a daily basis i would say
02:43:18 most days we're talking from the order
02:43:19 of an hour
02:43:22 so that with the i think with
02:43:26 the fact that we've selected these tier

02:43:27 four generators with
02:43:29 every technology that we can basically
02:43:31 drop to keep them as clean as possible
02:43:33 it seems to be the best choice
02:43:38 what would be the next best choice
02:43:41 stress the growth stress over
02:43:45 the infrastructure that's not if there's
02:43:46 not something else that you guys could
02:43:47 do to generate your own that would be
02:43:49 that would be cleaner

P. 827, 12/18/2019, #4
01:35:18 wilson minor question
01:35:22 um how long when you're making a
01:35:23 contract with cmp how long is that
01:35:25 contract for
01:35:26 when you're making a deal with them
01:35:27 about your wholesale pricing scheme
01:35:30 i don't think i know the answer to that

1/15/2020 #5-7
00:11:22 shaving was for cmp in the area not
00:11:24 because of their needs
00:11:26 but as as wayne discussed at one of the
00:11:29 other meetings when we were talking
00:11:29 about traffic
00:11:30 you typically look…
This is Lannan talking

P. 221, 1/22/2020, #4
00:08:21 um it was interesting today to hear from
00:08:23 mr lannon about the
00:08:24 the electric use so it'll be interesting
00:08:26 to know how that compares to cmp's
00:08:29 um you know the capacity of cmp you know
00:08:32 i
00:08:33 don't know anything about that and and
00:08:34 maybe i think mr cotter
00:08:36 wanted some time to rebut so maybe he
00:08:38 would rebut that next time anyway but i
00:08:40 just put that on there
00:08:41 so maybe a letter from cmp saying that
00:08:44 that
00:08:45 providing this much power to a new plant
00:08:47 isn't going to be a problem for them
00:08:49 yeah i guess that or so whatever i mean
00:08:51 the applicant could take care of that if
00:08:53 they had some information
00:08:54 they could provide to us or cmp or you
00:08:55 know i don't know just

P. 1504, 10/28/2020, #1-4

(O'Connor)00:58:09 thanks a number seven
00:58:12 um cmp commitment um
00:58:15 there was an attached letter that i
00:58:17 didn't get
00:58:19 i've received an awful lot of paper in
00:58:21 the last couple of weeks
00:58:23 um does has does anybody else remember
00:58:25 seeing that letter from cnp
00:58:27 committing to providing the power for
00:58:30 the
00:58:31 uh could you make sure we get a copy of
00:58:33 that [Cotter] i will do that

P. 1553, 10/28/2020, #7
00:07:25 great thank you bob you're welcome i
00:07:29 just email each of you a copy of the
00:07:31 letter that ed cotter
00:07:32 emailed to me on cmp's commitment
00:07:37 for power for the facility so you should
00:07:39 see that in your emails
00:07:40 at some time

P.1619, 11/4/2020, #8
00:00:14 forward to the board as well
00:00:18 now didn't we uh did you want to talk
00:00:21 about that cmp
00:00:22 uh letter and the follow-up on that
00:00:25 yep that's very thank you
00:00:28 um um we got the letter from cmp
00:00:32 um to ed cotter and
00:00:36 i think daisy do you want to speak on
00:00:38 what your impression was of that letter
00:00:40 uh i know i had impressions but i think
00:00:42 yours would work thorough
00:00:47 daisy uh i'm not i'm not
00:00:51 remember we got a letter from from about
00:00:54 cmp
00:00:55 um guaranteeing uh that they had
00:00:58 lines in the area without having well
00:01:00 having power
00:01:02 right um
00:01:06 jeff this was one of yours as well i
00:01:08 think you were one of the initial
00:01:09 questioners
00:01:11 whether or not cmp had the ability to
00:01:14 provide
00:01:15 uh enough power to uh nordic aquifers
00:01:18 yeah and i think daisy and someone else
00:01:21 who pointed out the letter from cmp
00:01:22 seemed very sort of generic and sort of

00:01:24 like
00:01:24 something they would just send out to
00:01:26 sort of anybody and it didn't sort of
00:01:28 talk about specific like they didn't
00:01:29 know the specifics of the project or
00:01:31 just wasn't as detailed as it would have
00:01:32 been nice to have seen
00:01:35 ed do you have any comments on that
(Cotter) 00:01:39 yeah i think my my general comment is
00:01:41 that cmp is a
00:01:43 huge utility that gets away with uh
00:01:45 doing kind of
00:01:46 their their process um because it is
00:01:50 pretty established and that's
00:01:52 that cover letter is what they do for
00:01:54 new projects
00:01:56 they basically you know they understand
00:01:59 that they don't know all the details of
00:02:01 the project but that they're going to
00:02:02 provide us with what we need
00:02:05 but they also recognize that we have a
00:02:08 commitment to them
00:02:09 to cover their expenses for upgrades and
00:02:12 other things that might be needed so
00:02:14 that's a long process we're in the we're
00:02:16 in the
00:02:18 process now of signing a contract for
00:02:20 the engineering and design
00:02:22 of that system um
00:02:25 you know we're talking you know a long
00:02:28 lengthy process to get that going but
00:02:31 what they give us now
00:02:32 to say yes we're gonna go forward is
00:02:36 here's a letter that says that we cover
00:02:38 customers in this area and we're going
00:02:39 to work
00:02:40 with you to get you coverage
00:02:43 or service as well i think i mentioned
00:02:47 last time but
00:02:48 i think once we sign a contract
00:02:52 with a with cmp it's called an internet
00:02:56 interconnection agreement and it'll be a
00:02:59 contract that says that
00:03:02 cmp guarantees that they will provide
00:03:05 nordic with a certain amount of power
00:03:07 and nordic provides guarantee that they
00:03:10 will cover
00:03:10 costs for for connection um
00:03:14 we can provide that but it's not going
00:03:16 to be
00:03:17 for a little while because we're still
00:03:19 negotiating that but that's something we
00:03:21 could provide pre-construction if that's

00:03:23 a
00:03:23 condition that you'd like to add yeah
00:03:27 i think it will be a condition uh will
00:03:28 that does that sense for hf
00:03:30 daisy uh you i guess daisy
00:03:33 yeah i'd love um maybe you just
00:03:35 elaborate a little bit about what kind
00:03:37 of um
00:03:38 what kind of that how that connection
00:03:40 fee works you know for uh
00:03:42 for a household of course they sort of
00:03:43 string a line that's a connection fee
00:03:45 um for you all is there more like an
00:03:47 impact fee
00:03:49 that might you know affect the
00:03:50 infrastructure that moves power around
00:03:53 belfast um
00:03:56 they in this case they're looking at
00:03:59 understanding
00:04:00 if there are upgrades needed
00:04:03 because their rules don't allow them to
00:04:05 impact other customers so
00:04:08 if if we need power they're not going to
00:04:10 be able to or they would never be
00:04:12 allowed to
00:04:13 say sure here's power and
00:04:16 miss feel you may not get power during
00:04:19 certain storms because nordic needs it
00:04:21 so what they need to do is a assessment
00:04:24 of the
00:04:24 needs of the area and upgrades that
00:04:26 might be needed to
00:04:28 increase the resiliency to add nordic
00:04:31 into that mix
00:04:32 so for instance we know that they're
00:04:34 going to have to upsize some equipment
00:04:36 in their substation in belfast and we
00:04:39 have to pay for that
00:04:41 didn't know the good thing is that as
00:04:44 cmp
00:04:44 describes it to me right now they are
00:04:47 their
00:04:48 grid in belfast area is kind of a 1990s
00:04:51 2000s
00:04:54 build and it's got some fragility to it
00:04:59 um this is going to require them to
00:05:02 upgrade some of that equipment and
00:05:03 they're going to be
00:05:04 working under 22 20 20 kind of design
00:05:08 and
00:05:09 redundancy so the good news is that
00:05:12 there's going to be
00:05:12 better equipment in the area the bad
00:05:14 news is nordic has to pay

00:05:16 a fair amount of money for that um but
00:05:20 that's the you know that agreement
00:05:21 that's the agreement we can provide it
00:05:23 would have some redaction of commercial
00:05:25 terms
00:05:27 but it will have the guarantees that i
00:05:29 think the planning board is looking for
00:05:33 yeah that that would be great for me
00:05:38 uh any other questions on that issue and
00:05:41 do they have an idea what your sort of
00:05:42 your gross
00:05:44 electrical demand is the ballpark
00:05:48 um they do and it comes down to
00:05:51 talking about
00:05:54 peaks versus averages
00:05:57 and also what kind of conditions
00:06:01 would happen during a
00:06:05 area peak so if we're in a 90 degree
00:06:09 95 degree heat wave for four days and
00:06:12 cmp is very stressed
00:06:14 they're trying to understand what our
00:06:16 ability to turn on generators and lower
00:06:18 our demand is so we're
00:06:20 that's the kind of stuff that we're
00:06:21 trying to work through with them right
00:06:23 now
00:06:23 it also is a wide-ranging area it's not
00:06:26 just belfast it has to do with
00:06:29 um even south of rockland
00:06:32 certain structures and parts of their
00:06:35 infrastructure south of rockland
00:06:37 are impacted by decisions that they make
00:06:39 in belfast so it's a large
00:06:41 state regional issue that they're trying
00:06:44 to
00:06:44 grapple with thanks

P. 1761, 12/03/2020, #5
(Marshall re: conditioning)
00:48:23 for the minor error emissions permit
00:48:27 so because there's been
00:48:30 such minimal
00:48:33 on this issue with specifics
00:48:37 as to how power would be delivered
00:48:41 to the nordic site by cmp
00:48:45 how the costs of such are going to be
00:48:49 born be it by ratepayers albeit by
00:48:52 nordic

P. 1763, 12/3/2020, #5
00:52:35 issued so i understand
00:52:39 what the process now is cmp
00:52:42 and nordic are in the preliminary part
00:52:45 of engineering negotiations

00:52:47 for how how uh power is going to be
00:52:50 transported to the site
00:52:51 from the substation that that that
00:52:54 process
00:52:55 is going to take a number of months in
00:52:58 the meantime we're going to have to
00:52:59 issue a permit

00:53:43 that there was very little information
00:53:47 provided on
00:53:49 regarding the provision of power to the
00:53:51 site
00:53:53 other than a fairly
00:53:58 nondescript letter from cmp as to how
00:54:02 service could be provided
00:54:05 right they've been along this kind of
00:54:06 script i mean no details

P. 1766
P1766
P. 1766, 12/3/2020, #5

(Cotter)00:58:37 line here but i
00:58:38 i can't see how i can tell cmp how to do
00:58:41 their work or
00:58:43 and you know the the cost structure as
00:58:45 well
00:58:46 whether this is born by nordic aqua
00:58:49 farms or
00:58:50 cmp rate payers or somewhere in the
00:58:52 middle depending on the results of our
00:58:54 negotiation
00:58:56 their gov that's governed by the puc
00:58:59 and cmp's rules
00:59:03 i just you know i i can understand your
00:59:05 concerns i just don't want to
00:59:07 put us in a position where we can't
00:59:08 fulfill the needs put forth in this
00:59:11 condition

P. 1770, 12/3/2020, #5-7
(Goeff)
01:08:07 my concern has always been just like
01:08:09 we haven't had enough information to
01:08:10 know how much power does nordic need
01:08:13 and cmp realistically provide that we
01:08:15 just don't
01:08:16 i've never had a good sense of of the
01:08:18 kilowatts or whatever
01:08:20 um or and the leather we got from cmb
01:08:22 was so generic as to be not that
01:08:24 reassuring

01:08:25 to me so anyway
01:08:28 that's more the nature of what i would
01:08:30 want to see here just some assurance
01:08:31 that
01:08:32 cmp has reviewed it it's possible and
01:08:34 it's reasonably economic for them to do
01:08:37 it it's not a
01:08:38 trillion dollars it's something that
01:08:40 fits in
01:08:41 nordic's budget to to to provide
01:08:44 anyway that's my thought yep

P 1847, 12/9/2020, #6-8
01:12:45 of what's happened
01:12:46 okay and have a question uh
01:12:52 yeah uh uh wayne uh i assume that uh if
01:12:56 there's any uh
01:12:57 cost improvements to the system
01:13:00 uh to cmp uh i'm assuming that nordic's
01:13:04 gonna pick up those
01:13:05 costs i'm uncertain that that's
01:13:08 uh the assumption that can be made i
01:13:10 think that that's one that
01:13:12 uh based upon the degree of improvements
01:13:14 that may
01:13:15 be necessary some may be born by nordic
01:13:18 and some may be born by cmp as overall
01:13:21 improvements to
01:13:22 the quality of the system some
01:13:24 improvements
01:13:25 may already be desired within the area
01:13:28 to
01:13:29 enhance the quality of overall service
01:13:31 to cmp repairs
01:13:33 so the public's not going to be picking
01:13:35 up any of these costs
01:13:37 i don't know that wayne and i think
01:13:40 that's one of the reasons why i asked
01:13:42 for an identification at the end as to
01:13:46 who actually did pay service costs
01:13:48 associated with
01:13:50 whatever improvements may be necessary
01:13:52 and at this point in time
01:13:54 i don't fully know the extent of
01:13:57 improvements that may be necessary
01:13:59 to cmp's substation
01:14:03 cmp's distribution lines
01:14:07 to be able to address the electrical
01:14:10 needs of
01:14:11 nordic and there's nothing that's been
01:14:13 submitted the date that's
01:14:14 that says this is exactly what must
01:14:16 occur and what do you think you need to
01:14:19 sort of make that assessment

01:14:21 i think what you really need at this
01:14:22 point in time is to have more
01:14:24 information coming up through
01:14:26 uh cmp

P. 1849, 12/9/2020, #6-8

01:16:03 jeff says i think that's a one
01:16:05 one sort of worst case scenario is that
01:16:07 all of a sudden we you know the
01:16:08 project's built and then they're coming
01:16:09 back and saying well actually we need to
01:16:11 be
01:16:11 burning diesel all the time because cmp
01:16:13 can't meet our needs
01:16:14 so um we want to be sure that
01:16:17 i guess the other the other worst case
01:16:19 scenario um
01:16:21 i imagine is if the negotiations go such
01:16:23 that
01:16:24 uh the rate payers end up spending you
01:16:26 know paying all the money for the
01:16:28 upgrades needed for nordic's project
01:16:30 which doesn't sound good for rate payers
01:16:32 but i'm not sure again how that like
01:16:34 how we could um affect that at all from
01:16:37 where we sit on this board
01:16:39 and so what um wayne what uh do you see
01:16:42 is sort of
01:16:43 how would you handle the that like worst
01:16:45 case negotiation
01:16:46 scenario where
01:16:49 you know picking up all the tab instead
01:16:51 of having an impact fee

10/19/2020 email, D. Bond

Has CMP committed in writing to have adequate capacity for Nordic's needs at all times?

10/21/2020 email, G. Gilchrist

Does CMP understand Nordic's power needs, and can they provide it?

Document C3
26 Pages

To: Amy Grant, President, Upstream Watch

FR: Mike Lannan

RE: Nordic Power Requirements February 28, 2021

ELECTRIC POWER

1. In many Planning Board reviews and/or appeals to the Zoning Board of Appeals (ZBA), the "PERSON" that could possibly be aggrieved are local landowners to the proposed project, that either directly abut the proposed use or are close nearby. This is simply because in order for a landowner to be considered an AGGRIEVED PARTY in Maine, they must be affected more than the average PERSON.
2. The Planning Board started their review process under the assumption that an AGGRIEVED PARTY can only be a PERSON abutting the facility or directly nearby. In many cases, it could be reasonable to make this narrow geographic assumption, at least initially, for PERSONs, but it was not for Nordic Aquafarms (Nordic) applications. In the Nordic case, aggrieved parties must include the towns of the Midcoast region and their inhabitants whose future will be impacted by the decisions of the Belfast Planning Board.

3. On January 22, 2020, which was the last time Upstream Watch was allowed to provide direct testimony to the Planning Board, the presentation largely focused on what was disclosed by Nordic to the Planning Board as of that date and what was not

known with respect to facility power demand needs, infrastructure capabilities, and emergency power/supply questions. The testimony can be summarized as:

i. As of January 22, 2020, no estimate of Nordic's normal or seasonal peak, power demand had been provided.

ii. In Nordic's original applications, and in the air quality assessment, the power plant proposed was discussed as a proposed peak demand "shaving" plant.

iii. During the Planning Board hearings, the power plant was also described as capable of meeting Nordic's emergency power demand needs.

iv. Nordic's application referred to two studies: one with respect to their initial noise assessment and one with respect to their original air quality permit application and assessment. Both of these studies were related to potential health, safety and welfare impacts from Nordic's proposed 14 MW power plant. Both of these studies were completed by subconsultants and addressed to Nordic's prime energy consultant, Gridworks Energy. Upstream questioned why the critical primary study for these two subconsultant reports was never entered into the record by Nordic.

v. Without any power study or specific power requirements proposed by Nordic's power consultant or the power demand needs directly, how Nordic would be met those needs in a sustainable manner, that would also allow room for other facilities to connect to the grid within Belfast and in surrounding

towns that could be limited by this decision, was never presented to the Planning Board.

vi. Indirectly, one facility power consumption data point was provided. Nordic's power plant capabilities were included in the air permit application appendix. Nordic claimed its power production capabilities may be as high as 14 MW.

vii. Nordic did discuss in the hearings that their power demand was more than the power plant could provide, but they could make critical decisions to keep everything running during a power outage. The discussions inferred that their power plant capabilities and peak demands and were close, but not quite sufficient.

viii. The power plant production rate may or may not be accurate or sufficient for meeting the facility demand needs, but based upon this one window into Nordic's power demand, as stated by Upstream, is likely much more than the City of Belfast's power demand, and likely closer to the Waldo County power demand (i.e. regional demand).

ix. No discussion of how this demand could be met was provided to the record, so Upstream suggested that the Planning Board considered a third-party evaluation of the power needs funded by Nordic on the City's behalf, but the Planning board did not require one. Instead, they allowed Nordic to provide the minimum amount of information Nordic deemed appropriate.

x. In lieu of the third party review the City and the Planning Board did not perform the proper due diligence internally to obtain the power supply needs, determine Nordic's potential area of influence, notify the potential areas that may be affected by their approval of this project, or continue the hearing until Nordic did provide the proper information.

xi. In the deliberations of the Planning Board after Upstream's testimony on January 22, 2020, the Planning Board required Nordic to obtain "a letter from CMP saying that providing this much power to a new plant isn't going to be a problem for them."

4. Again, since the actual power demand load was never provided to the Planning Board, the request for a letter understanding that ***"this much power to a new plant isn't going to a problem for them",*** cannot be interpreted quantitatively (i.e. in all conditions).

5. At the October 7, 2020 Planning Board meeting, the Chair acknowledged that Nordic claimed to have provided this letter, but also noted that he had still not seen any commitment letter from CMP and it was not loaded onto the City's website in the Nordic project folder either.

6. A copy of the CMP letter was provided soon thereafter to the Planning Board. The letter, marked by the City as Exhibit 3, was dated February 20, 2019, was provided more than a year after the Planning Board's request, and more than a year and a half since the Chair requested it again. It is simply is too old and irrelevant to be considered a response to the concerns raised by Upstream Watch and the request by the Planning Board for assurance.

7. The February 20, 2019 letter from CMP clearly is a response to an inquiry from Nordic early in their exploration of this site. This letter is in response to an initial contact letter inquiring about service responsibility for the area. The intent of the letter addressed to ***"To Whom it May Concern"*** is best summarized in the second sentence "***We are pleased to inform you that Central Maine Power Company ("CMP") has transmission and distribution facilities in the vicinity of the proposed site."*** In other words, ***"Yes, dear potential customer, you have contacted the right people if you want to obtain an interconnect agreement".*** It is not a power commitment or summary of a fatal flaw analysis, or any other analysis one might expect attached to a letter of commitment to any type of power demand. It had little to no information in it.

8. The lack of information was apparent to the Planning Board as well, as noted in the November 4, 2020 discussion of each Board members comments. Before offering Nordic an opportunity to respond a Planning Board member summarized the letter as **"I think Daisy and someone else pointed out that the letter from CMP seemed very sort of generic and sort of like something they would just send out to sort of anybody, and it didn't sort of talk about specifics; like they didn't know the specifics of the project. It just wasn't as detailed as it would have been nice to have seen."**

9. In Nordic's response to the disappointment expressed by the Planning Board with respect to generic response to their request for information, Nordic replies, ***"My general comment is that CMP is a huge utility that gets away with uh doing kind of their,***

their process, um, because it is pretty established and that's, that cover letter is what they do for new projects."

a. Yes, it is when a developer contacts them initially without providing an Interconnect Request and any project specific information.

b. Since the February 20, 2019 letter CMP has examined power demands from Nordic, discussed them with the Public Utilities Commission (PUC) and has had a representative, their power consultant, involved in the process. But did not think that any of that should be submitted to the Planning Board. Instead only the 2019 letter was provided.

c. Even before the 2019 letter, CMP had been provided some power demand information at least as early as 2018.

10. Nordic's representative then went on to add, "***they don't know all the details of the project but that they're going to provide us with what we need, but they also recognize that we have a commitment to them to cover their expenses for upgrades and other things that might be needed so that's a long process we're in the, we're in the process now of signing a contract for the engineering and design of that system"***

a. This statement acknowledges that Nordic did provide some demand needs information to CMP, but more will be needed.

b. It also discussed engineering and design for improvements for "that system". Any statement about engineering and designing a specific system is in direct conflict with their previous consistent statements about undefined needs.

c. It is nice that Nordic suggests a verbal commitment to some sort of cost sharing, but that statement provides no definite assurance.

11. More of Nordic's response" ***"Once we sign a contract with a with CMP it's called an interconnection agreement and it'll be a contract that says that CMP guarantees that they will provide Nordic with a certain amount of power and Nordic provides guarantee that they will cover costs for, for connection."***

a. From the full statement up to this point, Nordic makes it sound like the extent of the power demand information that could have possibly be provided to the Planning Board is that generic letter from 2019, and then this interconnection agreement, well out in the future, after the expected end of the Planning Board permit proceeding window. That meant the Planning Board had to make a decision without knowing if Nordic's power needs could be supplied by CMP, or how, and with what consequences to Nordic, Belfast, or to the other towns in Midcoast Maine.

b. A fatal omission to the Planning Board record is any information from Nordic's interconnect request. A developer cannot negotiate an interconnection agreement without providing basic load demand information and that information triggers a feasibility study.

c. Nordic's interconnect request has been submitted and has been reviewed by both CMP and the Public Utilities Commission (PUC). Some of the basic load demand assumptions the Planning Board requested were provided therein, so the same information used for the request could

have been provided to the Planning Board. Nordic decided not to do so.

12. At this juncture, one of the Planning Board members asked Nordic: ***"Do they have an idea what your sort of, your gross electrical demand, in the ballpark?"*** The response from Nordic was ***"Um. They do. And it comes down to talking about peaks versus averages and also what kind of conditions would happen during a area peak so if we're in a 90 degree, 95 degree heat wave for four days and CMP is very stressed. They're trying to understand what our ability to turn on generators and lower our demand is so we're that's the kind of stuff that we're trying to work through with them right now. It also is a wide-ranging area. It's not just Belfast. It has to do with um even south of Rockland. Certain structures and parts of their infrastructure south of Rockland are impacted by decisions that they make in Belfast so it's a large state, regional issue that they're trying to grapple with."***

a. So to summarize this exchange with respect to their power demands,

    i. Nordic starts with a 2019 generic "To whom it may concern" letter from CMP claiming that CMP is so large, that is all they can get for the Planning Board,

    ii. There is then some admission of discussions with CMP, but they don't know all the details yet.

    iii. It then transitions to specific local upgrades to the closest substation and the possibility of Nordic paying for it, and

iv. Lastly, Nordic admitted to providing demand load information to CMP that could and should have been provided to the Planning board. Nordic also discussed some unknown CMP requirements that will require Nordic to "get off the grid" but there were no other discissions of scenarios. Ultimately, rather than disclose to the Planning Board what it already was compelled to disclose to the Public Utilities Commission, Nordic defaulted to, effectively "its CMP's problem, not ours".

13. Nordic Aquafarms is not your typical residential, commercial, or light industrial facility that can be installed in the ROS zoning district. There is nothing "light industrial" about Nordic's proposed use of natural and manmade resources that are used to provide "ESSENTIAL SERVICES" to areas that extend beyond direct abutters and beyond Belfast.

14. The Planning Board underestimated the potential geographic extent in their assumptions for considering impacts to water quality, water availability, power supply, and power distribution. Nordic was asked on multiple occasions for details associated with water and power usage demands, and the responses throughout at least the last year were incomplete at best, and misleading at worst. Nordic did not provide sufficient information, even after it was requested by the Planning Board to fully define the potential area of impact and the proper conditions to ensure that Nordic could connect without adversely affecting the grid in all of Midcoast Maine. As a result, the Planning Board could not make a determination, and this project must be remanded back to Planning Board to provide to Nordic, again, an opportunity to demonstrate that there are adequate electric resources available

and that Nordic's complete consumption of those resources are acceptable to the towns of Midcoast Maine.

15. What is missing from the entire power demand response from Nordic is the “fatal flaws” analysis measuring Nordic’s power demand against demand and circumstances currently identified by CMP and the PUC that would result in violations, with whatever unknown potential loads estimates Nordic provided to CMP in their Interconnect Request and subsequent discussions.

16. It was Nordic’s responsibility to demonstrate to the Planning Board that their demand for power could be satisfied in all applicable scenarios without adversely affecting ESSENTIAL SERVICES. Nordic ignored the Planning Boards repeated requests for Nordic to provide their power requirements for the multiple operating scenarios that were discussed during the Planning Board process. The Planning board neglected its responsibility when it provided a permit without receiving and evaluating the most basic demand questions with respect to the ability of CMP to maintain ESSENTIAL SERVICES.

17. While it is understood that neither the Planning Board nor the City has control over power supply, or CMP’s power distribution system, that does not grant the Planning Board authority to issue a permit while ignoring the requirement for the Applicant to demonstrate that their project can maintain the existing ESSENTIAL SERVICES now, and with normal and reasonable additional growth in the region or the authority to deprive the other towns in the Midcoast region of development opportunities without their knowledge or participation.

18. By the Planning Board suggesting that the ESSENTIAL SERVICES would be determined by CMP in their conditions instead of

requiring the demands requested and a solution, the Planning Board ignored the rationale and importance of their local responsibility for review and conditioning. To defer to CMP, the Planning Board had to ignore the fact that CMP's goals in any power demand assessment, and the Planning Board's may be similar in some respects, but are not the same.

19. CMP is interested in distributing power on very wide basis. They are concerned with the overall system performance. While CMP must maintain minimum redundancy and resiliency, they do not have to think about how one particular facility with very high demand, added to one location may, or may not, impact the ability of a City or even a region to properly absorb additional residential and commercial growth in their region for many years to come.

20. CMP has discussed three "temporary" options to try to improve the grid to cure the adverse impact that Nordic will cause to the grid, and that might allow CMP to develop a strategy to satisfy Nordic's request to connect, but none have been approved. To be clear, at a point in time well before the record was closed for Nordic's input, Nordic knew that the grid cannot supply the demand Nordic requested in their Interconnect request in its current configuration and withheld this information from the Planning Board.

21. Given the obstructionist tactics to date by Nordic Aquafarm's counsel when Upstream Watch provided other comments, concerns, and conflicting information, (or even this appeal), it is extremely likely that Nordic's counsel would again suggest, on Nordic's behalf, that information in this brief is new testimony and "should be stricken". So in anticipation of this argument and in

the interests of the ZBA's time, let us just say that the focus of this brief and others is to highlight the rationale that requires the ZBA to return these permits to the Planning Board for further review and participation by the affected Midcoast towns.

22. Upstream Watch does not attempt to validate or judge any of CMP's independent consultant's findings or Nordic's estimates that were obtained from CMP's documents that are provided in these appeal briefs. It is Nordic's not Upstream Watch's obligation to present missing information or validate information that was known to Nordic, but not provided to the Planning Board upon request. Furthermore, it is simply not reasonable to burden Upstream Watch with gathering and providing this project specific information from Nordic's other permitting efforts. As a result, this brief is primarily intended to explain to the ZBA why the ZBA must remand Nordic's Planning Board permits back to the Planning Board.

23. The information herein is provided to the ZBA to identify that Nordic had more power demand estimates than it shared with the Planning Board, even after the Planning Board asked for them, and had permitting knowledge critical to the Planning Board's decision process. And since Nordic withheld it, the Planning Board could not properly determine whether the project should have been approved or properly conditioned at the time of approval.

24. It is likely from the information from CMP that Nordic's power demand adds roughly 50% of additional power demand to the CMP's Belfast Region from one location. As of the time of permitting, approval by the Planning Board inadvertently stopped all future growth in the Belfast region. At that point in time the Planning Board unknowingly declared the Belfast Region a "no

growth area" with respect to adding power demand to the grid until the only definitive power plan, CMP's permanent modifications are proposed and installed in 5 to 10 years or longer.

25. The ZBA must return these applications to the Planning Board so that all power demand scenarios can be considered, all impacted towns can be given notice and a proper opportunity to participate, and if permits are to be issued, it can be conditioned properly to ensure that Nordic would not adversely alter the power ESSENTIAL SERVICES to the Belfast Region, and possibly beyond to the Midcoast towns, as the current CMP finding suggests.

27. When (or if) the ZBA requires the Planning Board to reopen the record to discuss Nordic's proposed project, it should specifically require that the Planning Board to carefully consider what additional information Nordic provides to the record with respect to curing their current adverse impact to the grid, as proposed prior to any approval or denial decision.

28. When (or if) the ZBA requires the Planning Board to reopen the record to discuss Nordic's proposed project, it should specifically require that the Planning Board insist that Nordic provide estimates and means and methods to finance the design and installation of improvements that will be required to upgrade the distribution system to maintain ESSSENTIAL SERVICES to Midcoast Maine with the added demand scenarios Nordic requests, before the planning Board completes their review.

29. When (or if) the ZBA requires the Planning Board to reopen the record to discuss Nordic's proposed project, if Nordic does not provide a proposed solution, approved by CMP and ISO-NE for installation and financing for their complete facility needs for both construction phases as described in their applications to the

Planning Board and in the record, then Nordic must provide financing themselves to either cure the adverse impact or bypass the grid.

30. When (or if) the ZBA requires the Planning Board to reopen the record to discuss Nordic's proposed project, and if Nordic does provide a proposed solution that is approved by CMP and ISO-NE for installation and public financing is proposed, Nordic must provide legitimate rationale to the Planning Board justifying why the public, through fees to its ratepayers, taxes, borrowing, or other public means, should partially or fully fund the immediate improvements necessary to connect Nordic to the grid.

31. In the current CMP record, there is some initial justification "floated" for public funding for the any of the three temporary upgrades to the grid that may at least partially address Nordic's unknown initial power demand during construction and start-up. The rationale discussed in the PUC docket to date for public funding is that this temporary equipment could be removed, and reused elsewhere. The ZBA should demand that the Planning Board not act until Nordic provides legitimate rationale to the Planning Board justifying if public funding is proposed, as to why any public funding should be used for design, construction, installation, wear and tear, mothballing equipment, and retrofitting it into a new location that would be purchased now to address a need that would not exist without Nordic at all, and would not be part of the permanent solution to the grid that is not needed for 5 to 10 years without Nordic's power demand request.

32. In the interest of everyone's time and due process, the ZBA should require the Planning Board in its findings that Nordic provide all

previous requested information on power and otherwise after the Planning Board reopens the record, and before the Planning Board again invests any more significant time in their review.

33. Although Nordic side-stepped the requests of the Planning Board to provide their peak seasonal power demands and their reduced emergency power mode demand, Nordic did provide power demand information to a Public Utilities Commission (PUC) Docket. This information should have been shared with the Planning Board as requested, and therefore the ZBA must return these applications to the Planning Board for further evaluation and consideration. Before any additional review, Nordic must provide the peak power demand requested by the Planning Board, the power demand for the scenarios discussed in the record, and power demand for any alternative power demand and/or supply scenarios discussed with CMP that were withheld from the Planning Board's record and consideration. If this information is not provided in its entirety, then the Planning Board findings must be changed from approved with conditions to denial.

34. In 2011 it was clear to CMP that the increasing power demand from the Midcoast regional growth rate will eventually result in the demand exceeded the distribution system's requirements for resiliency and redundancy. PUC Docket #2011-00138 was created to explore "non-wire alternatives" (NMA) for CMP's midcoast Maine to extend the usable life of existing electrical distribution infrastructure. NWAs consider localized Distributed Energy Resources" (DERs) from renewable sources or Combined Heat and Power (CHP) generators that CMP can introduce within the existing grid and closer to the demand needs. They all the power

demand does not need to flow from the traditional power plant through the electrical distribution system.

35. The net result of strategically placed DERs is more power available from the same infrastructure without compromising ESSENTIAL SERVICES. With increased capacity in the same infrastructure, CMP can defer costly infrastructure improvements, which directly results in lower rate increases for its customers.

36. The PUC is constantly exploring the potential effects on the power supply and demand balance and system resiliency as new DERs and new user demand requests are processed. In fact, in a newer Docket, Docket #2020-00125, PUC's goal is to formalize procedures to streamline this continual review process so that the PUC can more quickly determine what DERs may be effective, and how effective they may be at delaying required upgrades. This process had been working well for CMP's Midcoast region as the new upgrade needs were postponed for approximately five years or more at this time.

37. Nordic, through discussions with CMP pertaining to their interconnect request learned well before the Planning Board closed the record to them that their interconnect request would singlehandedly destroy the PUC process to use DERs to delay costly improvements to the midcoast grid. Without a doubt, fulfilling Nordic's connection request would require costly immediate and long-term upgrades. At this point Nordic became obligated to openly discuss this concern with the Planning Board, and to estimate the cost to improve the service, but elected to withhold this information.

38. Nordic cannot provide the proper studies and analyses to finance and improve the grid resiliency to ensure that power ESSENTIAL

SERVICES are maintained because the solutions do not exist yet. Nordic at a minimum is complicit in the discussion that upgrades should be funded by others (i.e. rates payers), and possibly involved in public justification that the CMP rate payers should pay for the “temporary” upgrades required to add Nordic’s demand to the grid. Given that the fact that this rate payer funded upgrade information was withheld from the Planning Board, the ZBA should require that the permit be returned to the Planning Board for further review and conditioning.

39. Although the demand information in the 2011 PUC docket was redacted for public consumption, CMP was able to calculate the overall potential demand with and without Nordic with the redacted information provided to the 2011 PUC docket. The analysis examined the grid as if Nordic were online in 2018 and 2019 to run their resiliency calculations. CMP reported these demands in a summary table that was added to the PUC Docket #2011-00138. According to the Docket table, the current estimates of Nordic peak power demand is 28 megawatts (MW). See attachments

40. It is hard for ordinary citizens and the Planning and ZBA Boards to understand the potential added stress or demand that Nordic’s interconnection request would mean to a grid that was beginning to approach the end of its capacity without a major overhaul. For perspective, it may be helpful to discuss Nordic’s 28 MW power demand in the context of a new subdivision with typical Mainer household electrical demands. Nordic’s interconnect request has the same demand as an interconnect request for 35,000 to 40,000 additional homes.

41. Nordic was able to convince the Planning Board to accept their repeated side-stepping of power demands during the permitting process Nordic did this by (1) suggesting that there was insufficient design progress to meaningfully satisfy the requests for information, and (2) by suggesting that their peak demand request is not important because their 14 MW capacity emergency power plant was available to replace their demand at any time, and (3) by suggesting that even if Nordic's power demand was a little higher than the available power, Nordic had many options to temporarily trim back or reduce their peak power demand. With a total peak demand request for 28 MW, the math for their rationale simply does not work. As a result, ZBA must return these applications to the Planning Board, and require the proper power demand scenarios, some that were shared with CMP, and other scenarios that are relevant to ensure that power ESSENTIAL SERVICES will be properly maintained.

42. PUC Docket #_2011-00138 was established to add "distributed energy resource" (DER) to the grid to offset new demand requests. Unfortunately, Nordic's request for 28 MW will immediately and permanently alter these PUC DER plans as summarized in the transcript from the PUC meeting on December 4, 2020, on page 11, lines 8 through when one CMP's non-wire consultants, Jigisha Desai, from DVL GL, clearly summaries the potential impact Nordic will have to their efforts: ***"Meanwhile CMP received a Nordic Aquafarms loading to connection request to serve a proposed new facility in the Belfast area. CMP coordinated the loading to connection information with ISO-NE for the CMP approach in January of 2020 and conveyed the urgent need to rebuild Section 80 based upon the Nordic Aquafarms request."***

43. Central Maine Power (CMP) discusses the area associated with the Nordic's proposed project as part of their "mid-coast area" because this is a regional area that is interlocked with respect to maintaining supply and distribution resiliency and redundancy. CMP's "mid-coast" area stretches as far south as what they call the "Boothbay Region", up through the "Camden-Rockland Region", and finally up through the "Belfast Region". "Section 80" is integral to these three subregions. Therefore, all of these areas will be affected by the addition of Nordic's demand without immediate upgrades to the grid. This immediate impact to this regional ESSENTIAL SERVICE could not be discussed properly by the Planning Board since Nordic did not properly disclose their demand that was provided to CMP. As a result, these permits must be remanded to the Planning Board for additional review, including notice to the impacted towns and provide to those towns opportunity to meaningfully participate in the process. The Planning Board can reopen the record for public comments on this power demand violation identified by CMP's consultant.

44. The CMP consultant continues describing the analysis of Nordic's impact on the grid in the same transcript on Page 11, Lines 15 through 18. "***ISO New England completed the final (indiscernible) Maine 2029 needs assessment in March 2020. Based on ISO New England's study results, it identified (indiscernible) violation results for the peak load conditions in CMP's Midcoast area in N-1 and N-1-1 conditions."***

45. With CMP's consultant confirming that the Belfast Region of the mid-coast grid will be in violation, the Planning Board did not consider in their evaluation that with this Planning Board approval no additional power demand can be added to the grid without

increasing the violation after their approval. Essentially the Planning Board halted development in the Belfast area at the time of this permit approval with this finding until Nordic's full load can be assessed. And since, given the pre-construction permitting conditions required by the Planning Board, DEP, and the outstanding Army Corp of Engineer's permit (assuming hypothetically that one is issued), and its planned "single permit" approach to build its facility in two construction phases, with about two years between construction phases, Nordic, CMP, and the Planning Board cannot take the "wait and see" approach with respect to power demand because to do so would preclude the issuance of any future permits that require power.

46. The CMP consultant in the December 4, 2020 transcript describes how the plan for power to the area could be altered to possibly address Nordic's demand on the grid. On page 12, lines 3 through 9, CMP's consultant notes, ***"Now, moving forward with our Section 80 review summary, DNV GL team completed the preliminary review of the Section 80 analysis in the report CMP and ISO New England has submitted, and we noted the key takeaways from the report and coordinated the findings, study assumptions, and gaps with the CMP team. It was noted that the Nordic Aquafarms interconnection will be done in two phases."*** Wait, what? This means that not only did Nordic have an estimate of their total demand to provide to CMP, they knew that their demand was too much for the grid. Alternatively, they proposed a two-phased approach to address their power needs. The total and phased power demands needed to be provided to the Planning Board and the record needs to be reopened to examine these needs independently of CMP's analysis.

47. The Planning Board asked Nordic during one of the initial permitting meetings whether there was any possibility that Nordic would consider permitting this facility in two separate phases since they were constructing it in two distinct phases. Nordic replied “no”, with the rationale that their project is only economically viable with both phases. And since all of the ancillary utilities would be installed in Phase One for both phases, as currently approved by the Planning Board, Nordic must provide a guarantee to the Planning Board that there is an active and available avenue for CMP to provide their full project (including Phase 2) power demand now, at this point in time. This can be easily done with a financial commitment by Nordic to finance their share of the improvements. The Board of Appeals should remand this project back to the Planning Board to develop a condition that would ensure that Nordic would design and finance an upgrade to the regional grid for both Phase One and Phases One and Two.

48. It is important to note that Nordic applied for an interconnect agreement well before the public Planning Board discussions with respect to power. In the September 4, 2020 report from the PUC Docket 2001-138, Nordic Aquafarms was referenced a dozen times. Their impact was summarized as: ***On January 21, 2020, CMP requested the PUC schedule a case conference to discuss the need to upgrade Section 80, and address reliability needs in the Midcoast area. CMP stated an immediate need to rebuild Line 80 in response to Nordic Aquafarms’ new customer interconnection request. Nordic Aquafarms is a new aqua culture salmon farm facility to be located in Belfast Maine. CMP stated that this interconnection will require the rebuild of Line 80 to meet certain contingencies at peak load level conditions.***

a. Although Nordic's power demands were not readily available to the public or the City in the partially redacted public information from the docket, Nordic clearly understood their own design assumption regardless, and should have honored the Planning Board's request to satisfy this request.

b. Therefore, Nordic's application fails to meet the above requirement and should have been denied as a matter of law. This the Planning Board failed to do. For the health and safety of the residents of Belfast, as well as to comply with the Belfast City Code and State Statutes, the Zoning Board of Appeals must remand this matter to the Planning Board for further proceeding not inconsistent with this Order.

PLEASE SEE ATTACHED:

REQUESTS FOR INFORMATION FROM ISO-NE
NON-WIRE ALTERNATIVES REPORT
SECTION 80 LETTER FROM CMP

Sec 66-1 Definitions.

i. (b) In the interpretation and enforcement of subpart B, all words shall carry their customary dictionary meanings. For the purpose of subpart B, certain words and terms are defined as follows:

9. <u>PERSON</u>. Includes a firm, association, organization, partnership, trust, company, corporation, or other legal entity, as well as an individual.

AGGRIEVED PARTY

A person whose land is directly or indirectly affected by the granting or denial of a permit or variance under the provisions of the zoning regulations (chapter 102), the shoreland zoning regulations (chapter 82) and the site plan review regulations (chapter 90), or a person whose land abuts land for which a permit or variance has been granted.

EMERGENCY OPERATIONS

Operations conducted for the public health, safety or general welfare, such as protection of resources from immediate destruction or loss, law enforcement, and operations to rescue human beings, property and livestock from the threat of death, destruction or injury.

ESSENTIAL SERVICES

The construction, alteration or maintenance of gas, electrical, or communication facilities; steam, fuel, electric power or water transmission or distribution lines, towers and related equipment;

LIGHT INDUSTRIAL

Manufacturing, altering, processing, assembling, warehousing or servicing goods in a manner which will not create noise, vibration, glare, dust, heat, smoke, odor or other substance or

condition which would interfere with or be incompatible with other uses permitted in the district.

PERFORMANCE GUARANTEE

A financial guarantee to ensure that all improvements, facilities, or work required by any ordinance will be completed or maintained in compliance with such ordinances.

10. PUBLIC UTILITY

11. See "Utility."

12. UTILITY

13. (1) A municipal or public utility or communication facility includes the following: Central Maine Power, New England Telephone, Belfast Water District, Belfast Sanitary District, cable TV, a private telephone company or paging service, any utility regulated by the state public utilities commission, and any other commercial communication tower.

d. Sec. 102-1255 Utilities. A nonresidential use shall provide adequate utilities and services that comply with the requirements of this section.

e. Sec. 102-1269 Impact on municipal facilities and services.

14. (a) The code enforcement officer or planning board shall require the applicant to participate in the construction or funding of municipal infrastructure and/or service system improvements when it is

demonstrated the applicant's proposed development will result in an adverse impact or decline in the level of service of any existing municipal or state infrastructure system or service.

1. (1) Require an applicant to prepare an assessment of the amount of impact a proposed project would have on municipal and state infrastructure or service systems, including but not limited to..."

ii. b) The code enforcement officer or planning board shall use the following guidelines in making this decision:

15. (1) Conducting the assessment. The applicant shall address the following factors in conducting the impact assessment, and the code enforcement officer or planning board shall consider the following factors in rendering its decision:

16. a. The status of the system and service identified in the adopted comprehensive plan and capital improvement program relative to any planned improvements and scheduling.

17. b. The net effect of the proposed development on the capacity of the infrastructure or service system, indicating the percentage share used or impacted by the development.

18. c. A cost estimate for improvement of this infrastructure or service system so as to meet the increased demand caused by the applicant proposal, and a breakdown of the applicant's share of that cost.

Document C4
2 Pages

CENTRAL MAINE POWER

Richard P. Hevey
Senior Counsel

January 21, 2020

Mr. Harry Lanphear
Administrative Director
Maine Public Utilities Commission
State House Station #18
Augusta, Maine 04333-0018

RE: CENTRAL MAINE POWER COMPANY,
Request for Approval of Non-Transmission Alternative (NTA) Pilot Projects for the Midcoast and Portland Areas,
Docket No. 2011-138

Dear Mr. Lanphear:

By Procedural Order dated October 10, 2018, the Hearing Examiners in the above-referenced proceeding put all aspects of this proceeding on hold. This determination was based on uncertainty regarding (1) the status or the results of the anticipated ISO-NE Maine Needs Assessment and (2) the issue of whether the Commission intended to reopen the local transmission standards proceeding in Docket No. 2011-00494.

One aspect of this proceeding relates to the implementation of a non-transmission alternative ("NTA") pilot project for the Midcoast area. As part of the June 10, 2010 Order Approving Stipulation in *Central Maine Power Company and Public Service of New Hampshire, Request for Certificate of Public Convenience and Necessity for the Maine Power Reliability Program Consisting of the Construction of Approximately 350 Miles of 345 kV and 115 kV Transmission Lines ("MPRP")*, Docket No. 2008-255, Order Approving Stipulation (June 10, 2010) (MPRP *Order*) the Commission required CMP and GridSolar, LLC ("GridSolar") to file NTA Pilot projects for the Midcoast and Portland areas as a means of addressing reliability needs in such areas.

Prior to this proceeding being put on hold, CMP, Commission Staff and other parties to this proceeding were in settlement discussions regarding the scope of various alternatives to meet the reliability needs of the Midcoast area. As part of those discussions, the need to rebuild Section 80 of CMP's system was discussed. Section 80 is a 115 kV line that runs from Coopers Mills Substation in Windsor to CMP's Highland Substation, located in Warren.

83 Edison Drive; Augusta, ME 04336
Telephone 207-621-6546
www.cmpco.com, richard.hevey@avangrid.com

AVANGRID

The need for CMP to rebuild Section 80 has become urgent based on the request of a new load customer to interconnect to CMP's system. Nordic Aquafarms is requesting transmission and distribution service from CMP to serve its proposed new aqua culture salmon farm facility to be located in Belfast, Maine. In December 2018 CMP performed a comprehensive steady state power flow analysis on the transmission system in and around the Belfast area with the objective to determine the needs required to interconnect Nordic Aquafarms 23.7 MVA of load in the Belfast, Maine area for a new aqua culture salmon farm facility. During the analysis performed by CMP, it was noted that each potential alternative to interconnect the Nordic Aquafarms load will require that Section 80 be rebuilt in order to meet certain N-1-1 contingencies at peak load level conditions.

Nordic Aquafarms is seeking an in-service date to occur in April 2021. Consequently, CMP needs to move forward with the issue of rebuilding Section 80, which was part of the overall Solutions Analysis for the Midcoast area. CMP therefore respectfully requests that the Hearing Examiners schedule a case conference in order for parties to discuss the immediate need to upgrade Section 80, as well as the overall approach to addressing the reliability needs in the Midcoast area.

Please contact me if the Commission has any questions regarding this filing.

Sincerely,

Richard P. Hevey

Richard P. Hevey
Senior Counsel

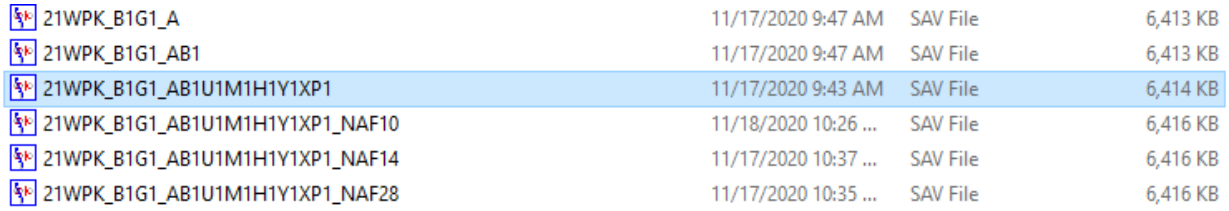
ATTACHMENT
DOCKET NO. 2011-00138

1 DATA REVIEWED

DNV GL received the following data from CMP for the S80 & Midcoast area analysis

- **Study Cases:** winter study case files (PSS®E), Figure 1

Figure - 1



- **Load:** the Midcoast area load file, "!MIDCOAST_LOADS_PEAKS.pdf"
- **Presentation:** The Midcoast area study update presentation, "CMP Midcoast Area LAS Solutions"

2 SECTION 80 CLARIFYING QUESTIONS

2.1 PSS®E Files

1. Please confirm that CMP utilized the winter study case files (PSS®E) listed in Figure 1 for the "CMP Midcoast Area LAS Solutions". If not, share the latest PSS®E files.

2. It was noted that the name of the third file in Figure 1 and Figure 2 is different. Please clarify whether the PSS®E file listed in Figure 1 and Figure 2 is the same or not? If not, share the latest PSS®E file.

Figure – 2

Case	Closed Unity Switch 24-7	Unity 5 MVAR STATCOM	Meadow Rd T1 Open	Highland 50 MVAR STATCOM	New Park St - Meadow Rd 34.5 kV Line	Park St 2nd 115/34.5 KV Xfmr & 2nd Park St-Highland 115 Line	Nordic Aqua Farms Load (MW)	Sect 80 Winter LTE % following L/O S204 & S86
21WPK_B1G1_A	-	-	-	-	-	-	0	105
21WPK_B1G1_AB1	X	-	-	-	-	-	0	94
21WPK_B1G1_AB1U1	X	X	-	-	-	-	0	92
21WPK_B1G1_AB1U1M1H1Y1XP1_NAF28	X	X	X	X	X	X	28	110
21WPK_B1G1_AB1U1M1H1Y1XP1_NAF14	X	X	X	X	X	X	14	101
21WPK_B1G1_AB1U1M1H1Y1XP1_NAF10	X	X	X	X	X	X	10	99

3. DNV GL noticed that the STATCOM was modeled at Highland substation in the PSS®E case named "21WPK_B1G1_AB1U1M1H1Y1XP1". Based on Figure 2 detail included in the presentation (slide 7), the STATCOM should not be modeled in the study case file, "21WPK_B1G1_AB1U1M1H1Y1XP1". Please clarify the study approach and consideration for the study case.

4. Please confirm whether the winter study cases consider the winter rating of all the transmission elements or not.

5. Item 1 response of "Winter Peak Section 80 Sensitivity Infor for DNV GL 12.04.2020.docx" file suggests that CMP did not perform the analysis for the summer cases yet on Option 3. When will CMP provide the updated S80 Summer study cases and results?

6. CMP's "Midcoast LAS Presentation 12092020.pdf" file indicated that 100% of the 90/10 peak load level is utilized for the Summer and Winter Peak Load Level Analyses. CMP's load level is brought to 1,700 MW in PSS®E cases. CMP's annual Planning study report, Appendix B.2 provided the total, 90/10 load forecast for 2029, Summer and Winter load is 1743 MW and 1578 MW respectively. Is there a reason CMP updated the winter peak load level in the PSS®E case to 1700MW?

7. CMP's "Midcoast LAS Presentation 12092020.pdf" file indicated that the CMP load level brought to 1,312 MW in PSS®E for the Off-Peak load level analyses. Please clarify whether this Off-Peak load level is considered for Summer or Winter-Peak analysis? Did CMP perform the Off-Peak load level analyses for the Summer and Winter-Peak cases?

8. CMP's "Midcoast LAS Presentation 12092020.pdf" file indicated that PV DER projects approved by NEPOOL RC through Sept 2020 were included for the analysis at 26% of nameplate capacity. Is

this for a Summer case? Please provide the list of the PV DER projects included and dispatch level for the Summer and Winter-Peak analysis.

9. What dispatch level is considered for the Wind generation in the Winter-Peak Cases?
10. What dispatch level is considered for the Run-of-River Hydro generation in the Summer and Winter-Peak Cases?
11. Which non-intermittent resource is considered offline in the study area for CMP's S80 and Midcoast analysis?

2.2 Comparison of Load Summaries

The following table provides a load summary comparison of the Midcoast load of 1) ISO-NE Upper ME Needs Assessment (2019, Summer case), 2) CMP latest Midcoast area study Winter cases ("21WPK_B1G1_AB1U1M1H1Y1XP1_NAF28 winter case"), and the historical peak load from 2018 and 2019.

Substation	Original Bus#	New Bus#	2019 ISO-NE Upper ME Needs Assessment Summer case (MW)	21WPK_B1G1_AB1U1M1H1Y1XP1_NAF28 Winter case (MW)	Peak load 1/2/2018 6:00:00 PM (MW)	Peak load 1/21/19 18:00 (MW)
Camden	102040	902040/912040	10.3	12.631	12.17	11.41
Fox Island	102046	102046	3.5	2.194	2.1	2.03
Manktown	102037	902037	0.2	0.249	0.31	0.23
Meadow Rd	101267	901267	3.7	3.469	1.85	3.21
Park St	100508	900508/910508/920508	23.4	23.765	21.72	21.22
Stickneys Corne	102138	902138	4	5.113	4.88	4.73
Thomaston Creek	102039	902039/912039	7.7	10.702	10.16	9.9
Union	102139	902139	3.3	4.227	4.12	3.91
Waldoboro	102038	902038	6	7.664	7.4	7.09
Warren	102036	902036	2.8	3.438	3.24	3.18
Dragon	100206	100206	9.7	9.7	9.7	9.7
Camden-Rockland Total			**74.6**	**83.152**	**77.65**	**76.61**
Boothbay Harbor	102211	902211/912211	10.4	10.27	9.44	9.5
Bristol	102210	902210	5	5.072	4.74	4.69
Damariscotta Mills	102209	902209	8.9	8.745	8.49	8.09
Edgecomb	102208	902208	1.3	2.292	2.12	2.12
Messina	102205	902205	2.6	3.848	3.34	3.56
Sheepscot	102207	902207	0.7	2.551	1.35	1.24
Boothbay Region Total			**28.9**	**32.778**	**29.48**	**29.2**
Belfast	101243	901243	3.6	5.202	4.92	4.81
Belfast West	102024	102024	3.4	3.4	5.93	5.93
Belfast West	102025	902025/912025	11	10.897	10.33	10.08
New Load (Nordic)			21.3	28	28	28
Brooks	102104	902104	2.1	3.104	3.01	2.87
Prospect	102029	902029	4.1	5.405	5.3	5
Searsport	102028	902028	3.5	5.048	4.99	4.67
Unity	102102	902102	7.6	11.173	9.51	10.34
Lincolnville	100178	900178	3.7	5.037	4.75	4.66
Belfast Region Total			**60.3**	**77.266**	**76.74**	**76.36**
Midcoast Area Total			**163.8**	**193.196**	**183.87**	**182.17**
Red color numbers were not provided in the CMP historical load data but added here for comparison purpose.						

1. Which historical peak load is employed for the winter case study; 2018 or 2019?

2. How does CMP reflect the historical load data in the winter case? How does CMP apply a 1.081 weather normalization multiplier to historical load data to achieve 90/10 weather conditions for the winter case?

3. Does CMP apply the weather normalization multiplier to each substation load individuality?

4. What is the historical load value of the Dragon Cement load for the Summer and Winter season?

5. The historical peak for the Midcoast area load plus the load from Nordic and Dragon Cement is approximately 183 MW (see columns 6 and 7 in the table above), however, CMP included 193 MW load in the study case (see column 5 above). Please explain the rationale for the higher winter load model.

6. The total Midcoast area load is calculated as 193.196MW in the winter case CMP utilized for the study (column 5). However, this value is 163.8MW in the summer case (column 4). Other than the difference between the value of new load from Nordic (21.3MW in the summer case vs 28MW in the winter case), there is still more than a 20MW difference between the summer case and the winter case. Please clarify the reasons/drivers for this difference in the summer case and winter case.

    a. Note: The load differences between the summer case and the winter case are notable at some substations such as Thomaston creek, Sheepscot, Belfast, Unity, and Lincolnville.

2.3 Winter Peaking Forecast

1. If the winter case is the worst case in the area why ISO-NE did not use the winter case for performing the study?

2. DNV GL made the following observations (below). Based on these observations, please clarify why CMP is forecasting the mid-coast area to be winter peaking.

    a. As depicted in the following tables, the Winter peak load in ISONE's 2020 CELT report for 2029 is 20,334 MW and the Summer peak load is 24,755 MW. The winter peak load is lower compared to the Summer peak load.

1.1 Summer Peak Capabilities and Load Forecast (MW)

This table shows the summer peak capabilities and peak load forecast for 2019 to 2029. Values shown may not sum correctly due to rounding.

More information on the 2020 CELT forecast is available on the following ISO New England webpages:

Links:

Load Forecast | *Distributed Generation Forecast* | *Energy Efficiency Forecast*

Forecast and Capabilities	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
1. Load [1, 2, 3]											
1.1 Gross (without reductions) [4]	29,018	29,224	29,461	29,717	29,977	30,241	30,504	30,768	31,034	31,297	31,550
1.1.1 Behind-the-meter PV [5]	705	787	827	874	894	938	970	997	1,021	1,044	1,062
1.2 Net (with reductions for BTM PV)	28,313	28,438	28,634	28,844	29,083	29,303	29,534	29,770	30,013	30,253	30,489
1.2.1 Energy efficiency [6]	2,913	3,312	3,653	3,983	4,300	4,600	4,877	5,130	5,357	5,559	5,733
1.3 Net (with reductions for BTM PV and EE) [7]	**25,401**	**25,125**	**24,981**	**24,861**	**24,783**	**24,703**	**24,657**	**24,640**	**24,656**	**24,694**	**24,755**

1.2 Winter Peak Capabilities and Load Forecast (MW)

This table shows the winter peak capabilities and peak load forecast for 2019 to 2029. Values shown may not sum correctly due to rounding.

More information on the 2020 CELT forecast is available on the following ISO New England webpages:

Links:

Load Forecast *Distributed Generation Forecast* *Energy Efficiency Forecast*

Forecast and Capabilities	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30
1. Load [1, 2, 3]											
1.1 Gross - (without reductions) [4]	23,173	23,373	23,622	23,853	24,088	24,329	24,583	24,851	25,133	25,408	25,687
1.1.1 Behind-the-Meter PV [5]	0	0	0	0	0	0	0	0	0	0	0
1.2 Net - With reductions for BTM PV	23,173	23,373	23,622	23,853	24,088	24,329	24,583	24,851	25,133	25,408	25,687
1.2.1 Energy Efficiency [6]	2,668	3,207	3,547	3,859	4,146	4,407	4,640	4,851	5,040	5,208	5,353
1.3 Net - (with reductions for BTM PV and EE) [7]	**20,505**	**20,166**	**20,075**	**19,993**	**19,942**	**19,922**	**19,943**	**20,000**	**20,093**	**20,200**	**20,334**

b. It was also noted from CMP's website that CMP's largest system peak in the past 5 years is 1,716.4 MW on August 7, 2018. The observed peak was during the summer. Is there a reason, CMP is including a higher winter load in the provided study case?

c. The 90/10 load forecast details provided in the CMP's annual Planning study report Appendix B.2 are provided for your reference. The total, 90/10 load forecast for Summer and Winter load is 1743 MW and 1578 MW respectively. The winter, 90/10 load forecast for all the CMP area is lower compared to the Summer 90/10 load forecast.

Appendix B.2: Forecast Peak (90/10) Load (MW) & Net Energy (mil. kWh) by Service Center

	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
446-Alfred											
Summer	298	302	302	303	304	305	306	307	309	310	313
Winter	291	286	285	284	284	283	283	282	282	282	283
NEL	1,727	1,706	1,702	1,700	1,696	1,693	1,691	1,691	1,692	1,692	1,699
211-Augusta											
Summer	113	113	114	114	114	114	115	115	115	115	115
Winter	110	107	107	107	106	106	106	105	105	105	104
NEL	652	641	640	639	637	635	633	631	630	629	624
554-Bridgton											
Summer	67	68	68	68	68	68	69	69	69	70	70
Winter	65	64	64	64	64	64	63	63	64	64	63
NEL	387	382	381	381	381	380	380	380	381	381	379
514-Brunswick											
Summer	176	177	178	178	178	179	179	179	179	180	181
Winter	171	168	167	167	166	166	165	165	164	164	163
NEL	1,017	1,003	1,000	997	995	991	989	986	983	981	982
222-Dover											
Summer	46	46	46	46	46	46	46	46	46	46	46
Winter	45	44	44	43	43	43	42	42	42	42	41
NEL	268	263	260	259	257	256	254	253	253	252	249
524-Farmington											
Summer	124	128	128	129	129	129	129	130	130	131	129
Winter	120	121	121	120	120	120	120	119	119	119	117
NEL	715	725	722	720	718	717	716	715	714	714	702
551-Lewiston											
Summer	170	172	172	172	172	172	172	172	173	173	173
Winter	166	163	162	161	160	160	159	159	158	158	157
NEL	983	971	967	963	959	955	952	949	947	946	942
441-Portland											
Summer	369	373	374	375	375	376	377	378	380	381	387
Winter	360	353	352	351	350	349	348	347	347	347	350
NEL	2,136	2,109	2,105	2,101	2,094	2,088	2,083	2,081	2,080	2,080	2,102
231-Rockland											
Summer	123	124	124	124	124	124	125	125	125	125	127
Winter	120	117	117	116	116	116	115	115	114	114	115
NEL	710	700	697	696	694	691	689	688	686	684	691
225-Skowhegan											
Summer	41	42	41	41	41	42	42	42	42	42	41
Winter	40	39	39	39	39	39	38	38	38	38	37
NEL	239	235	233	232	231	231	230	230	230	230	223
221-Fairfield											
Summer	151	158	159	159	160	160	161	161	162	163	162
Winter	147	150	150	149	149	149	149	148	148	148	147
NEL	872	895	894	893	891	890	889	889	888	888	883
Total CMP											
Summer	1,877	1,703	1,706	1,710	1,713	1,716	1,720	1,725	1,731	1,737	1,743
Winter	1,835	1,612	1,606	1,602	1,597	1,592	1,588	1,585	1,583	1,581	1,578
NEL	9,706	9,630	9,602	9,580	9,554	9,527	9,507	9,494	9,484	9,477	9,477

2.4 Contingency Conditions

1. In the last 5 years, how many times have N-1-1 outages occurred and what was the cause?
2. Historically, how many outages occurred under extreme weather conditions?
3. What is the duration, timing, and frequency of contingency conditions?

2.5 Other Questions

4. Distributed Energy Resources (DERs) play a significant role in improving the reliability of the Midcoast area. Approved Solar/Battery projects from CMP's chapter 324 report were not included in the summer case. Does CMP plan to incrementally add DERs approved projects from chapter 324 to the summer/winter study cases?
5. For the Mid-Coast Analysis, please provide Efficiency Maine a list of all customers modelled at their contracted load, including their location and account number.
6. Please clarify whether the pilot Boothbay NTA/NWA project was implemented or not? If yes, did CMP model the Boothbay project in the S80/Midcoast power flow cases?
7. The study results included in the CMP's "Midcoast LAS Presentation 12092020.pdf" are for the summer case results or winter case results?
8. Is CMP proposing the following solutions for the Midcoast area upon completion of the Midcoast area study for the Summer and Winter cases? What is the estimated cost for the Midcoast area solutions?

    - Rebuild 21.7 miles of Section 80 to AVANGRID standard 1192 Bunting conductor (295 Summer Normal / 339 Summer LTE)
    - Highland 115 kV Greenfield BAAH Rebuild, Highland 50 MVAR STATCOM, Bucksport 115 kV 15 MVAR Capacitor Bank
    - Split Belfast West 10.8 MVAR bank into two 5.4 MVAR banks and add a 10 MVAR STATCOM
    - Unity low voltage needs reactive support—standard size 2.7 MVAR switched shunt capacitor bank resulted in >3% Delta V, thus 5 MVAR STATCOM recommended for more dynamic voltage support (to be further refined in next phase with NWA). For redundancy, a second 5 MVAR STATCOM should also be added for the loss of the first STATCOM.
    - Rerate 5.96-mile segment (Belfast to Brooks) of 34.5 kV line Section 24 from present 120 deg F sag limitation (13.6 MVA Summer Normal/LTE) to minimum 20 MVA
    - New 115 KV Highland To Park Street Line ($XXXM) & 2nd Park Street 115/34.5 kV Transformer ($XXXM)
        - Park Street 115 kV would require four breaker ring bus
    - PLC addition To two Park Street 34.5 kV capacitor banks (8.8 & 9.0 MVAR) to trip upon high voltage above 1.05 p.u (to be coordinated with other voltage control devices in a separate study)
    - Operational solution: For the duration of maintenance of segment of Section 266 from Highland to S266A tap, also open Meadow Road 115/34.5 kV Transformer T1—this assumes that Highland S/S is rebuilt to a breaker and a half, thus eliminating line end open contingency
    - PLC addition to two Meadow Road 34.5 kV capacitor banks (2 x 5.4 MVAR) to trip upon high voltage above 1.05 p.u (to be coordinated with other voltage control devices in a separate study)
    - PLC additions at Edgecomb, Boothbay, and Bristol, to trip capacitors at these stations upon high voltage above 1.05 p.u (to be coordinated with other voltage control devices in a separate study)
        - Alternatives might be more expensive STATCOM or other solutions
    - Bristol capacitor bank reduction from 3.6 to 3.0 MVAR

DNV·GL

Document C6
26 Pages

DNV·GL

MAINE NON-WIRES ALTERNATIVE COORDINATOR REPORT

REDACTED: Central Maine Power Midcoast Section 80 Non-Wires Analysis Report, Docket No. 2011-00138

Maine Office of the Public Advocate

Document No.: NWAC_CMP_Section80_01
Issue: A**, Status:** Redacted
Date: 21 September 2020

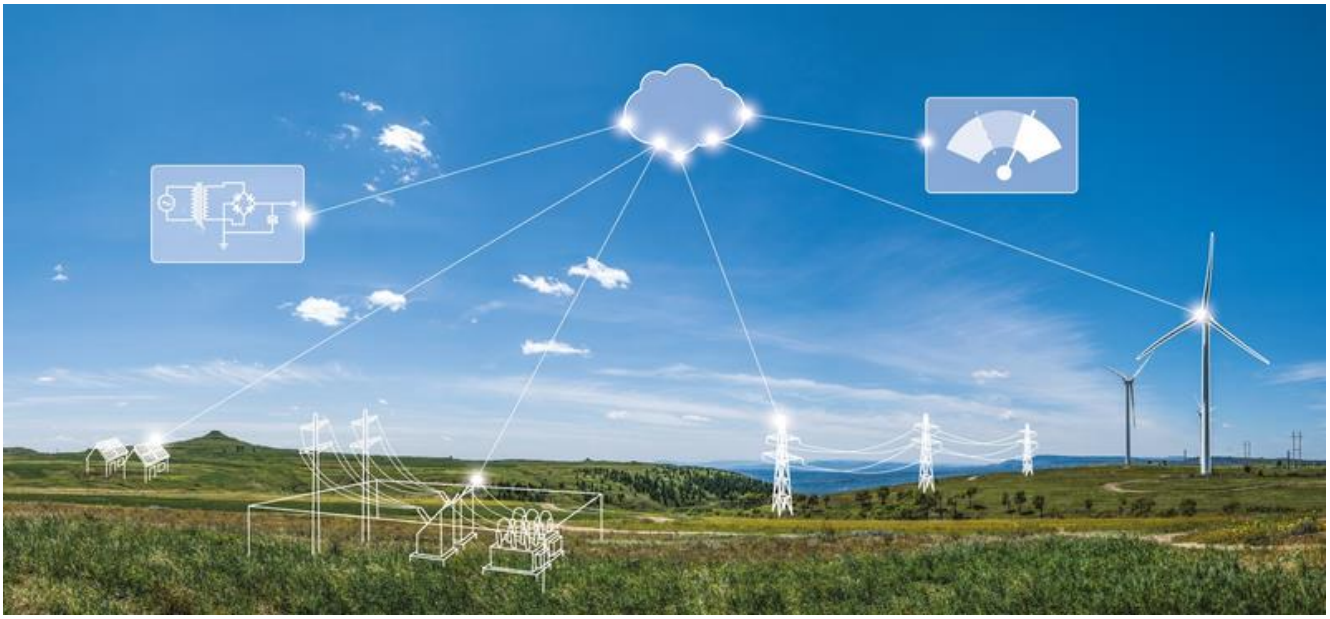


Table of contents

EXECUTIVE SUMMARY

DNV GL, as the Non-Wires Alternatives (NWA) Coordinator for the State of Maine, performed an NWA analysis for Central Maine Power's (CMP) proposed Section 80 Rebuild Project. Section 80 is a 21.7-mile 115kV line that runs from Coopers Mills Substation in Windsor to Highland Substation in Warren, running roughly northwest to southeast through the center of the Midcoast Area.

BEGIN REDACTION

END REDACTION

DNV GL identified three hybrid NWA options that would potentially utilize the existing network, upgrades to existing infrastructure as needed in the Midcoast area, and potential NWAs to avoid the Section 80 Rebuild Project. DNV GL presented the first two options in the June 5 report. These options were developed after evaluating the existing infrastructure in the area, but before receiving clarification on costs for these solutions from CMP. Options 1 and 2 were later determined to be non-viable due to the estimated cost of the solution compared to the cost of the Section rebuild to Maine. These options are described in the Appendix.

The features of Option 3 under selected contingency conditions are described below.

- Add a new, second 14 MVA transformer at Coopers Mills
- Add new reactive devices to avoid under voltage violations
- Include the biomass generator (Georges River Energy) and dispatch to full capacity, but consider the potential there will be no dispatch at times due to safe harbor guidelines
- Include all 14 approved DER projects from CMP's Chapter 324 report with 20% dispatch

BEGIN REDACTION

END REDACTION

Table 1. Section 80 thermal loading results under selected contingency conditions in proposed Option 3

Contingency	Section 80 thermal loading (%)
S86	71%
S86 + S226	83%
S86 + S204	95%

BEGIN REDACTION

END REDACTION

Significantly, Section 80 does not experience overloading in heat wave weather conditions under normal operation. In other words, Section 80 can fully support Nordic Aquafarms' total load requirement of **BEGIN REDACTION END REDACTION** without any reliability violations observed in Section 80 under normal operation. The main driver for the Section 80 Rebuild project is to avoid reliability violations under contingency conditions. **BEGIN REDACTION**

END REDACTION

Distributed Energy Resources (DERs) play a significant role in avoiding/deferring the Section 80 Rebuild project. There are in total 156.26 MW of DER projects from CMP's Chapter 324 report in the Midcoast area, and out of that, 51.26 MW are approved projects with commercial operations dates (CODs) before Q4 2021. These 14 approved projects, with the total of 51.26 MW, will have notable effects on avoiding Section 80 overloading under contingency conditions, as proposed in Option 3.

DNV GL designed Option 3 to solve for the grid needs, and additional load required by Nordic Aquafarms, during heat wave contingency conditions. **BEGIN REDACTION**

END REDACTION

Option 3, in its proposed configuration will cost approximately 4.25 million dollars. This estimate includes the cost of two new 20 MVar reactive devices ($1 million each), a new 14 MVA transformer ($1.25 million), and allocates one million dollars for operational changes, such as switching. DNV GL did not compare these costs to the cost of the Section 80 Rebuild as we are proposing this option as an interim solution while the Midcoast area is analyzed and Nordic comes online and more is known about their load requirements. If it is later determined that Section 80 needs to be rebuilt as a long-term solution, the equipment purchased for Option 3 could be redeployed elsewhere to avoid this equipment becoming underutilized after their purchase.

BEGIN REDACTION

END REDACTION

1 INTRODUCTION AND PROJECT BACKGROUND

DNV GL performed an NWA analysis for the proposed Section 80 Rebuild Project. Based on the review and analysis of all data from CMP made available to DNV GL by July 7, 2020. DNV GL identified the potential for three unique hybrid NWA options that would ensure the reliable delivery of electricity to customers in the Midcoast area. Two of these options were deemed not viable due to the estimated cost of the solution in comparison to Maine's commitment to the Section 80 Rebuild Project. The third option solves the area need over the next three to four years, although some uncertainty remains regarding the power needs of Nordic Aquafarms recirculating aquaculture system during extreme weather conditions. This uncertainty, combined with the growing integration of DERs in the area and a viable near-term NWA solution for Section 80, suggests that an NWA analysis for the Section 80 and Midcoast area, should be reevaluated when more is known about Nordic Aquafarms future load requirements. This report provides a description of the Midcoast area and Section 80 Rebuild Project, a system topology summary, and an overview of the proposed NWA option.

1.1 Central Maine Power Section 80 Filing

Line 80 is a 21.7-mile 115kV line that runs from Coopers Mills Substation in Windsor to Highland Substation in Warren. The estimated cost for the rebuild is $63.6 million, which would be allocated on a region-wide basis. Maine's share of the region-wide allocation would be 8% of the total cost, or approximately $5.1 million.

The Section 80 Rebuild Project was originally included in CMP's Maine Power Reliability Program (MPRP) in Docket No. 2008-00255. Consideration of projects in the Midcoast and Portland areas were deferred as a result of a 2010 Order Approving the Stipulation in that case. As part of the MPRP Order, the Commission required CMP and GridSolar, LLC (GridSolar) to file Non-Transmission Alternative (NTA) pilot projects for the Midcoast and Portland areas as a means of addressing reliability needs in these areas. The Order also directed CMP and GridSolar to file a detailed description of the pilot projects. Rebuilding Line 80 was among several reliability projects in the Midcoast area for which possible NTAs together with transmission projects were discussed.

A Public Utilities Commission (PUC or Commission) Procedural Order from October 10, 2018, put this proceeding on hold based on uncertainty regarding:

1. The anticipated results of ISO-NE Maine Needs Assessment; and
2. The issue of whether the Commission intended to reopen the local transmission standards proceeding in Docket No. 2011-00494.

Since that date, the Commission adopted revised local transmission planning standards.[1] ISO-NE also issued its final Upper 2029 Maine Needs Assessment.

On January 21, 2020, CMP requested the PUC schedule a case conference to discuss the need to upgrade Section 80, and address reliability needs in the Midcoast area. CMP stated an immediate need to rebuild Line

[1] *Maine Public Utilities Commission*, Investigation into Maine Electric Utilities Transmission Planning Standards and Criteria, Order Approving Stipulation, Docket No. 2011-00494, (February 25, 2020)

80 in response to Nordic Aquafarms' new customer interconnection request. Nordic Aquafarms is a new aqua culture salmon farm facility to be located in Belfast Maine. CMP stated that this interconnection will require the rebuild of Line 80 to meet certain contingencies at peak load level conditions.

CMP requested bifurcation of its petition so that review of the Section 80 Rebuild can be considered separately from and sooner than other proposed upgrades for the Midcoast area.

2 MIDCOAST SECTION 80 PROJECT OVERVIEW AND SUMMARY

2.1 Geographical Project Overview

The Midcoast Area, located in the northeastern coastal corner of CMP's transmission system, is shown in Figure 1 below. Section 80 runs roughly northwest to southeast through the center of the Midcoast Area.

Figure 1. Midcoast Area Geographic Map

BEGIN REDACTION

END REDACTION

2.2 Electrical Network Overview

BEGIN REDACTION

.

Figure 2. Midcoast Area Transmission One-line Representation

Figure 3. Illustrative Example of Loss of Two of Three 115 kV Lines in Midcoast Area Causing Section 80 Overload

END REDACTION

3 NON-WIRES ANALYSIS AND RECOMMENDATIONS

3.1 Data Request Summary

Table 2. summarizes the data requests DNV GL submitted to CMP. DNV GL addressed the possibility of adding new transmission/distribution lines as well as a new transformer, the estimated cost and line-length for these additions, and the possibility of adding new switch shunts in the existing substations. This table outlines the date of each data request or request for clarification, the date DNV GL received the response from CMP, and the data requested.

Table 2. Summary of Data Requests to Support the NWA Analysis

Document	Data Request Date	Data Received Date	Data Requested by DNV GL and Observations
2011-00138 - A DR set of ID OPA-004	03/04/2020	03/25/2020	OPA submitted the first data request for the Section 80 rebuild project. CMP provided power flow cases, relevant contingencies, and a result summary, but not a direct response to the data request. Further, CMP was finalizing the study report and results. CMP submitted an updated report on April 22.
2011-00138 - A DR set of ID OPA-005	05/08/2020	05/15/2020	Upon review of the power flow analysis results and observations in the April 22 filing, DNV GL proposed two potential options and discussed them with the OPA team. OPA team submitted the second data request. CMP provided a data response on 05/15.
2011-00138 - A DR set of ID OPA-006	05/22/2020	06/01/2020 & 06/02/2020	CMP's response provided on May 15 to DNV GL's request to confirm "whether the existing tower structure of Section 86 can accommodate the second circuit" indicates that: "For the portion of Section 86 built with lattice towers as a double circuit with Section 203 between Bucksport and Prospect, it is not designed to accommodate another transmission line circuit on the same lattice towers." DNV GL interpreted the May 15 response as indicated all but the identified section between Bucksport and Prospect could accommodate an existing line and subsequently requested CMP confirm that they can accommodate a second circuit on the existing poles of Section 86 from Prospect to Belfast Station without any pole or ROW upgrades on May 22. Hence, DNV GL & OPA team submitted additional data clarification request to clarify the remaining questions and evaluate the cost-effectiveness of proposed options and received CMP's response on June 1 and June 2.

Document	Data Request Date	Data Received Date	Data Requested by DNV GL and Observations
2011-00138 - A DR set of ID OPA-007	06/05/2020	6/12/2020	Upon review of the June 1 and June 2 data response, OPA submitted an additional data request to clarify the following to finalize the option evaluations. 1. CMP's response from June 1 indicates that: "The existing structures that support Section 86 from the Penobscot River (where Section 86 crosses on double circuit lattice towers with Section 203 the Penobscot River from Bucksport to Prospect) to Belfast 115kV Substation are only designed to support one transmission line circuit. To add an additional circuit to the existing Section 86 structures, field surveying and engineering analysis is required to determine methods to do this and meet electrical clearance and structural standards (such as the National Electric Safety Code). This would likely require a complete rebuild of Section 86 with all new structures that are specially designed to support double circuits." If CMP would need to conduct field surveying and an engineering analysis to determine whether the existing poles of Section 86 could accommodate a second line on all or a portion of the line or would need a complete rebuild, please indicate the time and cost estimate for conducting such an analysis. 2. DNV GL notes that Section 49, in the vicinity of Section 80, was given an intervention priority ranking of third in CMP's transmission system in the 2018 Health Assessment. The 2018 assessment indicated Section 49 had a health index of 47.9%. A project for Section 49 was included in the CMP's April 2020 project list provided to the NWAC and OPA but not in the revised list provided in May. Please indicate whether CMP currently has plans to address Section 49, including the project scope, planned in-service date or project need date, and estimated cost. 3. DNV GL observed that the Section 86 cost estimate includes a 50% contingency and the estimate is given with a range of -50% to 200%. The Section 80 cost estimate includes a 25% contingency and the estimate is given with a range of -25% to 25%. Please clarify the difference in the cost estimation approaches used for Section 86 and Section 80.

Document	Data Request Date	Data Received Date	Data Requested by DNV GL and Observations
2011-00138 - A DR set of ID OPA-007	06/12/2020	6/12/2020	OPA submitted an additional request for the following information: 1. The proposed cost estimate for Section 80, 22-mile line is $63.6 M whereas the cost estimate of Section 86, 15.67-mile is $61 M. Please clarify the reasons for the higher cost per mile of Section 86. Is this cost estimate comparable to the cost of the previous rebuild of Section 86? 2. Please state whether CMP's existing 115kv system shares a double circuit on the same poles as Section 86.
OPA-008	06/30/2020	06/30/2020	Upon review of responses from OPA-007, OPA submitted the following requests for information: 1. Please clarify the following: a. The MVA rating of the Section 49 (from Cooper's Mills Substation to Meadow Road Substations) after rebuilding the proposed Section 49 Conductor, from Structure 18 to Stickney's Corner Substation. b. Whether the Section 49 rebuild will be required after completion of the Section 80 rebuild 2. In order to be able to compare cost estimates between the Section 80 rebuild project and DNV GL's proposed Option utilizing Section 86, both cost estimates need to use the same contingency range. Please provide a cost estimate with a range of -25% to 25% for Section 86 or provide a cost estimate with 50% contingency with a range of -50% to 200% for the Section 80 rebuild project. This question is a follow up to CMP's previous response to OPA-007-002. 3. Given that "the cost to rebuild Section 86 for MPRP from Bucksport Substation to structure 112.8 in Searsport was approximately $12.4M", and by assuming that Searsport is roughly half of the way between Bucksport and Belfast substations, the cost estimate for the new transmission line of Section 86 would be approximately $24.8M, as opposed to $60.8M provided in OPA-006-012. Please clarify why there is such a large difference in the cost estimate. 4. Please clarify whether it is possible to change the cross-arm structure for the existing wood pole structure of Section 86 and accommodate 115kV,

Document	Data Request Date	Data Received Date	Data Requested by DNV GL and Observations
			double circuit on the existing pole rather than use a complete rebuild.
OPA-009	07/07/2020	07/07/2020	Upon review of CMP's responses to June 30's requests, OPA requested: 1. CMP's cost estimate for the Section 80 rebuild project with 50% contingency and a range of -50% to 200%. Specifically, OPA requested a copy of CMP's previously determined preliminary planning cost estimate of Section 80, which occurred after the initial preliminary cost estimate and before the final design cost estimate, to compare both the options with the same matrix. 2. A copy of CMP's transmission handbook or CMP's approved design for transmission pole, tower structure, size of overhead & underground conductor, and Right Of Way requirements so that future NWA options will be proposed considering the existing guide. In addition, OPA argued that "It was observed that the per-mile cost of selected historical projects e.g. Section 254 is $1.7 million per mile and the cost of Section 86 is $3.87 million per mile based on the preliminary cost estimate. In the review of Section 80 cost estimate, the cost of material & equipment is around 10 to 12% of the total cost. Hence the material cost is not a driver for the high cost. Further, it was discussed that the 50% contingency consideration plays a major role in the high-cost estimate.

3.2 Non-Wires Alternatives: Proposed Option 3

Section 80 is one of the major transmission (115 KV) lines that supply the Midcoast area from the North, starting at Coopers Mills substation and ending at Highland substation. DNV GL determined that a complete non-wires solution was not a feasible alternative to the Section 80 Rebuild Project based on the reliability needs in the area if other transmission lines were to fail; however, a hybrid NWA option is feasible. DNV GL proposes minimal system upgrades over the next three to four years **BEGIN REDACTION**
END REDACTION to provide time for Section 80 to be evaluated in the context of the entire Midcoast area and more certainty around Nordic Aquafarms' future load requirements.

The features of the proposed Option 3 are described below:

- Add a new, second 14 MVA transformer at Coopers Mills
- Add new reactive devices to avoid under voltage violations
- Include the biomass generator (Georges River Energy) and dispatch to full capacity or zero dispatch
- Include all approved DER projects from CMP's Chapter 324 report (total 14 projects) listed in Table 2 and highlighted in blue with 20% dispatch
- Open line from MEADOW ROAD to SECT 266B TP station
- Close tie-line between Unity and BENTON SW2 station

DNV GL notes that the planned and existing nearby generators discussed below, are excluded from CMP's Section 80 analysis. Other large industrial customers, like Dragon Cement, may also have backup generation and may be willing to provide support under the contingency conditions. DNV GL believes these resources will support reliability in the area under contingency conditions, thus mitigating the Section 80 overload and avoiding the need for the Section 80 Rebuild Project.

Nordic Aquafarms

Nordic Aquafarms is a first-of-its-kind large-scale recirculating aquaculture system that is currently being constructed. This project was cited in CMP's initial claim that Section 80 needs to be rebuilt immediately, due to the potential for increased demand on the grid during extreme weather conditions (see Section 1.1).
BEGIN REDACTION

END REDACTION

CMP's analysis does not include this generator in the study area.

Approved and future DERs from Chapter 324 report

As shown in Table 3 there are a total of 156.26 MW of DER projects from CMP's Chapter 324 report in the Midcoast area. 51.26 MW out of this 156.26 MW are approved projects with commercial operations dates (CODs) before Q4 2021. CMP's original analysis of the Section 80 area did not include approved DERs.

Therefore, DNV GL added them in to CMP's original PSSE power flow model to assess their impact on the Option 3 solution. The ISO-NE long-term planning guide includes solar PV under 5 MW for summer peak cases. All fourteen approved projects will have significant effects on avoiding Section 80 overloading under contingent conditions. DNV GL notes that two projects of those fourteen, Searsport and Belfast West Side, will be interconnected in the near vicinity of the Nordic Aquafarms project.

Table 3 lists the distributed generation projects in the Midcoast region as recently approved, fully executed, and future. It is important to note that the proposed Project 174 will be directly connected to Belfast West Side once approved.

Table 3. Recently approved, fully executed, and future distributed generation projects in the Midcoast region.

Approved distributed generation projects in the Midcoast area provided by CMP							
PRJ #	**ISO-NE i.3.9 Status**	**MW**	**Type**	**IA Executed**	**Substation**	**Circuit**	**COD**
174	P	4.75	Solar/Battery	4/30/2020	Belfast West Side	803D5	2/15/2021
148	A	2.125	Solar	2/18/2020	Meadow Road	270D1	4/1/2021
203	A	4.99	Solar/Battery	3/2/2020	Searsport	850D1	7/20/2021
81	A	2	Solar	2/25/2020	Stickney's Corner	245D2	3/1/2021
21	A	4.98	Solar	11/14/2019	Unity	860D1	12/15/2020
122	P	2.5	Solar/Battery	4/29/2020	Waldoboro	252D2	2/25/2021
Fully executed distributed generation projects in the Midcoast area from Chapter 324							
343	A-July RC	4.999	Solar	5/21/2020	Bristol	210D2	Q4 2021
181	A-July RC	2	Solar	4/6/2020	Coopers Mills Road	230D1	Q2 2021
142	A-June RC	4	Solar/Battery	7/13/2020	Lincolnville	800D1	-
416	August	3.55	Solar	6/12/2020	Meadow Road	270D2	Q4 2020
438	September	4.999	Solar	8/10/2020	Park Street	239D7	Q3 2021
102	A-June RC	4	Solar	7/2/2020	Stickneys Corner	245D1	-
163	A-June RC	4.875	Solar	5/11/2020	Union	251D1	Q4 2020
256	August	1.5	Solar	6/17/2020	Unity	860D2	Q4 2020
Future distributed generation projects in the Midcoast area from Chapter 324							
144	October	2.00	Solar		Union	251D1	Q4 2020
191	October	4.95	Solar		Waldoboro	252D2	Q4 2020
201		4.95	Solar		Unity	860D1	Q4 2020
205		5.00	Solar/Battery		Unity	860D2	Q4 2021
240		4.00	Solar/Battery	6/16/20	Searsport	850D2	Q4 2020
279		4.95	Solar		Unity	860D2	-
311	September	3.90	Solar		Coopers Mills Road	230D1	-
324		2.55	Solar		Union	251D1	-
352		4.95	Solar		Coopers Mills Road	230D1	-
355		5.00	Solar	7/15/20	Belfast 115	874D1	-
358		4.00	Solar		Belfast West Side	803D3	-
363		4.95	Solar		Coopers Mills Road	230D1	-

368		4.95	Solar		Belfast West Side	803D6	-
369		5.00	Solar		Belfast West Side	803D6	-
381		3.90	Solar		Belfast West Side	803D6	-
393		5.00	Solar		Belfast West Side	803D6	-
396		3.50	Solar		Belfast West Side	803D6	-
397		2.00	Solar		Belfast West Side	803D6	-
398		1.00	Solar		Belfast West Side	803D6	-
399		2.00	Solar		Searsport	850D1	-
415		4.00	Solar	8/18/20	Brooks	805D1	-
430		2.50	Solar		Brooks	805D1	-
433		4.00	Solar		Brooks	805D1	-
488		4.63	Solar		Park Street	239D5	-
491		3.50	Solar		Bristol	210D2	-
496		4.32	Solar		Brooks	805D1	-
511		3.50	Solar		Bristol	210D1	-

3.3 Technical impact analysis of proposed Option 3

DNV GL validated the reliability of Option 3 outlined above under selected contingency conditions utilizing the PSSE case ("2029_ME_9010_D1A_Y4") provided by CMP for Section 80 analysis. As the main goal of the Section 80 Rebuild Project is to avoid overloading under contingency conditions, the focus of the technical impact analysis is on resolving overloading under selected contingency conditions.

- The following outlines the process DNV GL used to evaluate Option 3. Per ISO_NE transmission planning technical guide, DER projects such as solar PV will be assumed to be dispatched at 26%. However, all approved DER projects from CMP's Chapter 324 report are dispatched at 20%. This 20% dispatch criteria is more in line with the CMP's response (OPA-006-002) that indicates DERs are modeled similar to wind generation (10% or 20% of nameplate).
- The Georges River Energy biomass generator is added to the PSSE case and dispatched to full capacity or zero dispatch under contingency conditions.
- **BEGIN REDACTION** **END REDACTION**
  7.3 MW is considered the net load requirement from the grid under contingency conditions.

The thermal loading results for Section 80 under selected contingency conditions studied in this analysis are tabulated in Table 4 for the proposed Option 3. The PSSE validation analysis indicates that Option 3 is a viable solution from a technical perspective deferring the need for Section 80 for the next three to four years by serving customers through a hybrid NWA.

Table 4. Section 80 thermal loading results under selected contingency conditions in proposed Option 3

Contingency	Section 80 thermal loading (%)	New load requirement from the grid (MW)	Reactive device	Additional system reconfiguration
S86	71%	7.3	20 Mvar at SECT 51A TAP34.5KV and 10 Mvar at Belfast	No
S86 + S226	83%	7.3	20 Mvar at SECT 51A TAP34.5KV and 10 Mvar at Belfast	No
S86 + S204	95%	7.3	20 Mvar at SECT 51A TAP34.5KV and 10 Mvar at Belfast	-Open one XFMR between Newcastle and Newcastle A -Open line between SECT 37 TAP and WISCASSET
S86 + S204 + Loss of Georges River Energy biomass generator	101%	7.3	20 Mvar at SECT 51A TAP34.5KV and 10 Mvar at Belfast	-Open one XFMR between Newcastle and Newcastle A -Open line between SECT 37 TAP and WISCASSET

3.4 Cost of Option 3 Solution

Option 3, in its proposed configuration will cost approximately 4.25 million dollars. This estimate includes the cost of two new 20 MVar reactive devices ($1 million each), a new 14 MVA transformer ($1.25 million), and allocates one million dollars for operational changes, such as switching. DNV GL did not compare these costs to the cost of the Section 80 Rebuild as we are proposing this option as an interim solution while the midcoast area is analyzed and Nordic comes online and more is known about their load requirements. If it is later determined that Section 80 needs to be rebuilt as a long-term solution, the equipment purchased for Option 3 could be redeployed elsewhere to avoid this equipment becoming underutilized after their purchase.

4 NEXT STEPS

Option 3 shows that the additional DERs and emergency generators, in conjunction with minor modifications to the existing grid infrastructure, can provide a reasonable amount of NWA resources to address heat wave contingency conditions over the next three to four years. DNV GL recommends that during that time the entire Midcoast area be reviewed to determine if the resources in the broader area are sufficient to avoid or defer the Section 80 transmission and distribution rebuild.

5 APPENDIX

This Appendix contains descriptions of Options 1 and 2, which were not discussed in the main body of this report. These options were deemed not cost effective.

Option 1 considers the following components as a hybrid non-wires alternative to the Section 80 Rebuild Project and illustrated in Figure 4:

- Add a new, 115 KV, 15.67-mile line between Bucksport and Belfast station, a second circuit on the existing poles of Section 86 without any pole or ROW upgrades.
- Close the 34.5 KV tie-line between Unity and Benton Switch stations under normal operation conditions
- New NWAs, the option considers an NWA resource to support the reliability need under contingency conditions. The details of the size and location of the NWA will be finalized upon completion of a more detailed impact study.

Option 1 provides a number of advantages compared to the Section 80 Rebuild Project, listed below.

- The line length for the proposed Option 1 is shorter compared to Section 80.
- Based on a preliminary reliability analysis, DNV GL observes that thermal loading on Section 80 (without Section 80 upgrade) was reduced and low voltage violations and voltage collapse issues under contingency conditions were resolved compared to CMP's proposed option. Details are listed in Table 5.

Table 5. Thermal and Voltage Comparison Between CMP Section 80 rebuild and Proposed DNVGL Option 1

Contingency	CMP Option (New Load/S80 Rebuild)	DNV GL proposed Option 1 (New Load/No S80 Rebuild)
S86	S80 @40% Lowest Belfast 115 KV 0.92 Pu Unity & New Load 0.82 Pu	S80 @31% No voltage violations at Belfast & Unity New Load increased to ~0.94 Pu
S86 + Mason Bus 2	S80 @60% Lowest Belfast 115 KV 0.86 Pu Unity & New Load 0.81 Pu	S80 @35% No voltage violations at Belfast & Unity New Load increased to ~0.94 Pu
S86 + 204	S80 @56% Lowest Belfast 115 KV 0.87 Pu Unity & New Load 0.83 Pu	S80 @35% No voltage violations at Belfast & Unity New Load increased to ~0.94 Pu
S86 + 226	S80 @55% Lowest Belfast 115 KV 0.85 Pu Unity & New Load 0.79 Pu	S80 @21% No voltage violations at Belfast & Unity New Load increased to ~0.94 Pu

Figure 4. Option 1

BEGIN REDACTION

END REDACTION

Option 2 considers a hybrid non-wires alternative to the Section 80 Rebuild Project, but unlike Option 1 does not require new 115 kV transmission lines. Option 2 includes the following components, illustrated in Figure 5:

- Add a new 115/34.5 KV, approximate 14 MVA transformer at Coopers Mills station.
- Add a new, 34.5 KV tie-line between Section 37 Tap and Section 25a Tap;
- Add new switch shunts at substations across the Midcoast area (approximately 70 MVar) to provide voltage support, mitigate low voltage violations and improve voltage collapse issues under contingency conditions. The exact size of the switch shunts will be finalized upon completion of a detailed reactive power study.
- Provide the following system reconfigurations, details will be coordinated with CMP and finalized upon completion of a detailed impact study:
    - Disconnect 115 KV line (Section 266) between Belfast and Lincolnville stations under normal condition;
    - Reconnect 115 KV line (Section 266) between Belfast and Lincolnville stations under contingency conditions.
    - Disconnect 115 KV line (Section 226) between Highland and Newcastle stations both under normal and contingency conditions;
    - Disconnect 115 KV line between Meadow Road and Sect 266B TP both under normal and contingency conditions;
    - Disconnect 34.5 KV line between Meadow Road and Sect 21 TP both under normal and contingency conditions.
- New NWAs at Belfast West station, approximate 2.5 MW, the NWA size will be finalized upon completion of a detailed impact study.

  New NWAs at Park Street station, approximate 2.5 MW, the NWA size will be finalized upon completion of a detailed impact study.

Some key advantages associated with the proposed Option 2 compared to CMP's Section 80 Rebuild Project are listed below.

- Option 2 as proposed does not require new 115 KV transmission lines.
- Option 2 efficiently utilizes the existing network capacity.
- Option 2 provides voltage support to the Midcoast area and resolves the low voltage violations and voltage collapse issues under contingency conditions.
- Option 2 shows lower thermal loading on Section 80 (existing) and resolved low voltage violations and voltage collapse issues under contingency conditions based on preliminary reliability analysis. Details are listed in Table 6.

Table 6. Thermal and Voltage Comparison Between CMP Section 80 rebuild and Proposed DNVGL Option 2

Contingency	CMP Option (New Load/ S80 Rebuild)	DNVGL proposed Option 2 (New Load/No S80 Rebuild)
S86	S80 @103.8% Lowest Belfast 115 KV 0.87 Pu Unity & New Load 0.75 Pu	S80 @98% No voltage violations at Belfast, Unity, & New Load
S86 + 204	S80 @207% Coopers TX @135% Voltage Collapse Unity 0.00 Pu	S80 @98% No voltage violations at Belfast, Unity, & New Load
S86 + 226	S80 @211% CoopersTX @136% Voltage Collapse Unity 0.00 Pu	S80 @98% No voltage violations at Belfast, Unity, & New Load

Figure 5. Option 2

BEGIN REDACTION

END REDACTION

About DNV GL

Driven by our purpose of safeguarding life, property and the environment, DNV GL enables organizations to advance the safety and sustainability of their business. We provide classification, technical assurance, software and independent expert advisory services to the maritime, oil & gas and energy industries. We also provide certification services to customers across a wide range of industries. Combining leading technical and operational expertise, risk methodology and in-depth industry knowledge, we empower our customers' decisions and actions with trust and confidence. We continuously invest in research and collaborative innovation to provide customers and society with operational and technological foresight. Operating in more than 100 countries, our professionals are dedicated to helping customers make the world safer, smarter and greener.