

**TOWN OF DUCK
PLANNING BOARD
REGULAR MEETING
June 9, 2010**

The Planning Board for the Town of Duck convened at the Duck Municipal Offices at 6:30 p.m. on Wednesday, June 9, 2010.

Present were Chairman Jon Britt, Vice Chair Joe Blakaitis, Ron Forlano, and John Fricker.

Absent: Randy Gilbreath.

Also present were Director of Community Development Andy Garman, Building Inspector Cory Tate and Permit Coordinator Sandy Cady.

Others Present: Council Liaison Chuck Burdick.

Absent: None.

Chairman Britt called to order the Regular Meeting of the Planning Board for June 9, 2010 at 6:36 p.m.

PUBLIC COMMENTS

None.

OLD BUSINESS

Discussion of Policies/Ordinances Related to Renewable Energy (Solar)

Director Garman noted that Building Inspector Tate was present for the meeting. He stated that at the Board's May 12, 2010 meeting, there were several questions directed toward Building Inspector Tate when the Board was looking at the structural installation and permitting requirements for solar energy systems, adding that staff was sent back to complete more research and talk to Building Inspector Tate to obtain answers for the Board. He stated that Building Inspector Tate would be giving a presentation on the items that he would be looking at when reviewing applications to install the systems. Chairman Britt stated that this would be very helpful.

Building Inspector Tate stated that Director Garman had asked him to come before the Board to present some things that, as a Building Inspector, he would look at for an installation of a solar PV system or solar water heating system. He stated that his presentation would basically scratch the surface of some of the information that was very technical as far as the Codes went. He stated that some of the items in the model (draft solar) ordinance were already included by the Electrical and Building Code. He went on to give a presentation to the Board and audience.

Council Liaison Burdick asked if there was a difference between solar PV and wind turbines. Building Inspector Tate stated that there was. He stated that generators in wind turbines were already AC generated, but there was no difference between a wind turbine and a gasoline powered generator as far as the internal mechanism. Building Inspector Tate continued his presentation.

Member Forlano asked if a hybrid system using photovoltaic and wind used two different types of current. He further asked if they were still going through the same inverter or if one was going into one inverter with the other going directly to the system. Building Inspector Tate stated that one would go through the inverter and then back to the grid, whereas the windmill for the wind turbine would generate electricity that would be used by the end user. He added that it could go onto the grid or into the structure, but would depend on how it was distributed.

Director Garman asked if it would go to a series of batteries. Building Inspector Tate stated that it could go into storage batteries but it would become more complicated. He added that when an AC current runs into a battery, there has to be a rapid fire to be able to put the AC current into the battery system. Then when it is taken out, it would have to be run through an inverter and back into the AC current. Building Inspector Tate continued his presentation.

Member Forlano asked if there was a chance of electricity left in the modules if a house catches fire and the DC disconnect was activated. Building Inspector Tate stated that there was. Chairman Britt agreed. Building Inspector Tate noted that it was the main hazard to the fire service in the systems. He added that even when the DC disconnect was activated, the modules are still energized. He stated that the only thing that would stop them from producing electricity was when the sun went down. He stated that a disconnect could be installed on a roof to disconnect the electricity sooner, but there would be the issue of accessing it. He added that if a house was fully engulfed in a fire situation, access to the roof may not be possible. He cautioned that there was an inherent amount of danger in the systems just for the fire service. Building Inspector Tate continued his presentation.

Member Fricker asked if Building Inspector Tate could quantify the electrical fire risks of the system. He stated that he never heard that there was any real risk for such a system. Chairman Britt noted that it could happen with any electrical system. Member Fricker agreed. Building Inspector Tate stated that the standard electrical system on a house was a 240 volt system. When the cells are connected in a series and the modules are arranged in parallel to create a certain amount of voltage, that average array as an output was approximately 480 volts. He added that it would result in a voltage that's double what the standard voltage on a house was.

Council Liaison Burdick noted that these systems are sold as commercial installations, approved by the Electric Code and the rating (testing) agencies. He stated that the Board was looking at equipment that had the fire risk built into it but that it had been tested and deemed safe for use. Building Inspector Tate agreed, adding that they would have a certain amount of safety if used and installed according to the manufacturer's instructions. Council Liaison Burdick added that they would also need to be installed according to the Electrical Code with the proper reason for a fire department as it was a recognized hazard to deal with in case of a fire. He presumed that the relative fire hazard of the equipment was extremely low or a homeowner would not be able to obtain insurance to install one. Building Inspector Tate stated that he was correct and that it was

relative when discussing electricity. Chairman Britt noted that the Board had not had many discussions on it. Building Inspector Tate stated that another consideration was that the modules have exposed parts on the back of them which were live and energized and needed to be guarded and properly protected.

Council Liaison Burdick stated that if the systems were deemed unsafe to use, they would not be licensed to use them. Building Inspector Tate stated that they were manufactured to a certain standard and if it met the standard it was deemed to have a certain amount of safety when used properly, however the problem that he runs into is if it was not properly installed, it creates an extreme fire hazard.

Council Liaison Burdick stated that he had a problem with Building Inspector Tate's comments. He stated that if all precautions were taken to make sure the system was installed properly, then the manufacturer was not important. He stated that the question was if they were properly produced in the first place and if they were installed according to a design that was approved by an electrical inspector. He asked if that wasn't the case. Building Inspector Tate stated that it was. Director Garman noted that Building Inspector Tate was not trying to say that people should not install these systems. Building Inspector Tate noted that if the system was not properly installed, they could be dangerous. He added that there was enough involved that a homeowner really needed to know what they were doing before they are installed.

Member Fricker stated that it seemed that the discussion between Building Inspector Tate and Council Liaison Burdick was that Building Inspector Tate was saying that people had to be very careful because of the risk, while Council Liaison Burdick was saying it was safe. He thought what Building Inspector Tate was really saying was that he felt that no installation of solar PV panel on a roof should be allowed without a requirement that persons who install them be licensed and certified. Building Inspector Tate stated that this would be ideal, however the Town does not have the authority to establish licensing requirements above and beyond what is required by the State.

Member Fricker asked why it could not be done. Building Inspector Tate stated that the North Carolina State Building Code allows a property owner to do their own work. He added that a homeowner could not be stopped if they wanted to take it upon themselves to install them. He noted that some jurisdictions have taken it upon themselves to administer a test for a homeowner who wanted to act as their own electrical contractor; a test to find out if the homeowner had enough knowledge to complete their own electrical installation. Member Fricker asked what would happen if the homeowner failed the test. Building Inspector Tate stated that the homeowner would not be allowed to do the installation as the Board would determine that the homeowner would violate North Carolina law by doing the installation. He added that no one has brought suit against any of those jurisdictions that administered the homeowner tests.

Council Liaison Burdick stated that his comments were not saying that everything was okay and the Town should not be doing anything, but that the basic technology was sound and safe as produced by those companies that have a UL listing for their products and that there has to be properly designed installations. He added that the Board could not go down the road just saying that there were too many safety hazards in this and therefore the Board would wash its hands of it. Chairman Britt disagreed. Member Fricker pointed out that Council Liaison Burdick was not

a member of the Planning Board and didn't think he should be telling the Board what they could and could not do. Council Liaison Burdick stated that he wasn't. Member Fricker stated that the Board was listening to Building Inspector Tate who was a licensed professional and if he concurred with Council Liaison Burdick's statement, he would welcome him to acknowledge it, but if he didn't, he wanted acknowledgement of it as well.

Building Inspector stated that a homeowner needed to know what they were doing in order to install the systems. He stated that the frames are aluminum and the Electrical Code required electrical bonding continuity between all of the non-current carrying metal parts. He stated that it was accomplished by bolting a mechanical lug to the aluminum frame on the module. He stated that if a lug is bolted to the module and the frame was aluminum and the lug was copper, dissimilar metals have been put together causing galvanic action in the presence of water. He added that it would cause the aluminum frame to deteriorate and not be grounded. He stated that if a homeowner goes on the roof to pressure wash it, they would get electrocuted.

Member Fricker asked if the North Carolina General Statutes restricted the Town from prohibiting solar installations. He added that according to Town Attorney Hobbs' opinion the primary goal of the statute appeared to be to allow every residential dwelling the right to install a solar collector. He thought the Board had gotten to the point at their last meeting that if they were to be kept off the ground, it could not be done without being in violation of the intent of the statute. He asked if there was a choice. Building Inspector Tate stated that the homeowner could install them within the provisions of the Zoning Ordinance. He stated that a homeowner could not install modules that exceeded the height limit. He explained that if the homeowner installed it according to the Electrical Code and if it passed his inspection, then the homeowner has the right to have the module.

Director Garman stated that the Board had discussed the issue to a degree with regard to the wind ordinance. He added that some of the things were redundant with some of the codes, but thought it was helpful to clarify what was required. He stated that it was the Board's job to be very careful about what was put in the ordinance to make it clear to people.

Member Forlano stated that he did not see in the draft ordinance where it stated that the equipment had to be UL listed. Director Garman stated that it was in the draft ordinance on Page 3. Building Inspector Tate stated that it was a redundant requirement because it was a requirement of the National Electrical Code. Building Inspector Tate continued his presentation.

Vice Chair Blakaitis asked if there was another automatic disconnect within the cell arrays. Building Inspector Tate stated that there was. He explained that there was telemetry on the board on the back of the individual modules which would ground out the output if the module malfunctions. He added that there was a fuse as well. Vice Chair Blakaitis asked if it lessened the hazard for the Fire Department if it worked. Building Inspector Tate stated that if the malfunction was in the solar panel itself it would, but if the malfunction was between the output on the solar panel and somewhere else, it would be a hazard to the Fire Department.

Vice Chair Blakaitis asked if the Fire Department would electrocute themselves in order to find out if the system was working correctly. Building Inspector Tate stated that they wouldn't as the

Electrical Code required signage to be placed on the structure to state that there was an additional power source. Building Inspector Tate continued his presentation.

Member Forlano asked Building Inspector Tate how he ascertained whether a solar panel was fastened to the structure sufficiently so that it would withstand 130 winds. Building Inspector Tate stated that he would rely on a recommendation from a structural engineer.

Member Fricker asked if the term “structural engineer” and “professional engineer” were synonymous for Building Inspector Tate’s purposes or if there was a distinction. Building Inspector Tate stated that they were synonymous and was the way the engineering recommendations were written in North Carolina. Building Inspector Tate continued his presentation.

Member Forlano asked if most pools were open loop systems. Building Inspector Tate stated that they were. Member Forlano stated that he had seen some of the systems on a solar roof and usually it covered almost the entire roof. He asked what the dead load of weight would be on something like that. Building Inspector Tate explained that in order to calculate it, one would need to know the linear footage of the pipe that was installed on the roof as well as the diameter of it. Member Forlano clarified that if a company that wanted to install a solar hot water system for the swimming pool a permit would be needed. Building Inspector Tate stated that he has never issued one. Member Forlano asked if they did come for a permit, how Building Inspector Tate would figure out if the roof that may have been built 20 years ago would be able to handle the dead weight. Building Inspector Tate stated that he would tell them they would need to contact a structural engineer. Member Forlano asked if a permit was required for a swimming pool solar heater that would be mounted on the roof of a home. Building Inspector Tate stated that it would be.

Member Fricker asked if there was anything that needed to be changed or added to the draft ordinance to make Director Garman and Building Inspector Tate’s jobs of enforcement easier. He gave an example of a requirement that there would need to be multiple inspections during the course of the installation to make sure things were going according to Code. He asked if it was an administrative function and would need to be in the ordinance. Vice Chair Blakaitis noted that it was already covered. Building Inspector Tate stated that it was addressed by the Code but it wouldn’t hurt to have it in the draft ordinance.

Director Garman recapped the Board’s discussion from the May 12, 2010 meeting with the Planning Board and audience. He stated that the 500 square foot limitation (this would be a limitation on the total area of a lot that could be covered by a solar energy system) seemed reasonable based upon the research he completed.

Council Liaison Burdick asked how much of an output an array of 500 square feet would do. Building Inspector Tate stated that it would be 10 watts per square feet, so 500 square feet would equal 50,000 watts. He added that it was a fair size. Chairman Britt did not feel like the Board was over-limiting. Building Inspector Tate went on to give a specific list of items that would be required to obtain a permit.

Council Liaison Burdick asked how Building Inspector Tate would come up with a control without stepping on the toes of the State and the restrictions that require an allowance for the systems. Director Garman stated that staff had come up with 2 definitions that would make a distinction between PV systems and the other systems. He added that the permitting requirements would be different.

Member Forlano stated that he understood the PV system, but asked if there was a distinction with regard to solar energy as a primarily hot water system. He added that he did not understand where the mechanical, chemical, electrical energy fits in with the solar system. Director Garman stated that it was a general definition for all solar energy systems. Member Forlano asked if the separation was the solar hot water and the photovoltaic. Director Garman stated that he was correct, adding that they were all solar energy systems.

Member Fricker asked if there were adequate provisions in the ordinance if a homeowner came in after installing a PV system without a permit. He further asked if they would have to come into compliance or be fined. Building Inspector Tate stated that there were provisions in the Building Code that if something had been constructed without proper permits, then he would have to do whatever was necessary to ensure that the Code in effect when the structure was constructed was compliant. Member Fricker asked if Building Inspector Tate felt that the Town's ordinances were sufficient to allow the steps that need to be taken from an enforcement standpoint. He further asked if they needed to be tightened up. Building Inspector Tate stated that there was already very specific language in the State Guidelines.

Chairman Britt asked the Board what direction they wanted to take. Vice Chair Blakaitis stated that he would like to see Director Garman tighten up some of the language and possibly flesh out a text amendment that would be close to completion.

Chairman Britt asked the Board if they had any changes to the draft ordinance.

Chairman Britt thought with regard to fences, there needed to be a reasonable level of protection as it seemed to be a gray area. Director Garman stated that it should be looked at. Chairman Britt agreed.

Member Forlano stated that if a landscaper did not know there was an electrical connection behind the module, it could be a problem, unless the owner had the module elevated 8 feet off the ground. Building Inspector Tate stated that the module was similar to a household electrical panel in that if there were live exposed electrical parts, it could electrocute someone if they stick their hand in it. He added that it was not a completely fail-safe protection, but was a reasonable level of protection.

Member Forlano did not think it was the Board's job to determine efficiency of the units or satisfying all of the risks involved, but it was the Board's job to stick to view sheds, lot coverage, and setback lines. He did not think the Board had the right to prohibit the systems. Chairman Britt agreed. Vice Chair Blakaitis stated that homeowner associations could not prevent them.

Vice Chair Blakaitis felt the Board made a lot of progress. Chairman Britt stated that he had learned a lot.

Chairman Britt thanked Building Inspector Tate for his presentation.

NEW BUSINESS

None.

APPROVAL OF MINUTES

Planning Board Meeting May 12, 2010

Chairman Britt directed the Board to review the minutes from the May 12, 2010 meeting.

Member Fricker moved to approve the minutes as presented. Vice Chair Blakaitis seconded.

Motion carried 4-0.

OTHER BUSINESS

None.

STAFF COMMENTS

None.

BOARD COMMENTS

None.

ADJOURNMENT

Chairman Britt moved to adjourn the meeting. There was no second.

Motion carried 4-0.

The time was 8:34 p.m.

Approved: _____
/s/ Jon Britt, Chairman