

**STATE OF NEW HAMPSHIRE
SITE EVALUATION COMMITTEE**

Docket No. 2015-06

**Joint Application of Northern Pass Transmission, LLC
and Public Service Company of New Hampshire
d/b/a Eversource Energy for a Certificate of Site and Facility**

**PREFILED DIRECT TESTIMONY OF KATE HARTNETT ON BEHALF OF THE
PLANNING BOARD AND CONSERVATION COMMISSION FOR
THE TOWN OF DEERFIELD**

November 15, 2016

Background and Qualifications

Q. Please state your name and address.

A. My name is Kate Hartnett. My address is 40 Thurston Pond, Deerfield, NH 03037.

Q. Please describe your official capacities for the Town of Deerfield?

A. I have been a member of the Conservation Commission since 1987 and have served as Vice Chair on the Planning Board since 1991 for the Town of Deerfield.

Q. What is your professional background and experience?

A. I have served the Town of Pembroke for almost 30 years in natural resource management, conservation and planning. I earned my Bachelor's Degree in Urban History and the History of Civilization at Bryn Mawr Liberal Arts College in Pennsylvania and obtained my M.A. at Columbia University in Urban Geography and Natural Resource Management. I am employed as a geographer. My work history includes managing the Jordan Institute, a non-profit in Concord, New Hampshire which specializes in efficient energy use and land use experience, serving as a contractor for ground water protection efforts and acting as a year round guide on the Mount Washington.

Purpose of Testimony

Q. What is the purpose of this prefiled direct testimony?

A. My testimony is being presented on behalf of the Planning Board and Conservation Commission for the Town of Deerfield.

1 **Q. Is the Planning Board and the Conservation Commission concerned that the**
2 **Northern Pass Project will unduly interfere with the orderly development of the Town of**
3 **Deerfield?**

4 A. Yes. The Planning Board and the Conservation Commission for the Town of
5 Deerfield have concerns about this project's impact on the rural character of areas in town, as
6 well as its impacts to the residential and commercial properties that are adjacent to the proposed
7 project. As currently proposed, the project may have an undue interference with orderly
8 development of the Town of Deerfield, and any public benefits are outweighed by the negative
9 impacts that the project will have on the Town of Deerfield. For further information, please see
10 my attached report.

11 **Other Impacts**

12 **Q. Are there other concerns that the Planning Board and the Conservation**
13 **Commission for the Town of Deerfield has about the impacts of the Northern Pass Project?**

14 A. Yes. The Planning Board and the Conservation Commission have concerns about
15 other issues, which include impacts to natural resources, historic sites, aesthetics, the public
16 interest and market economics. It is anticipated that further testimony on these additional issues
17 will be provided by the deadline of December 30, 2016.

18 **Q. Does this end your testimony?**

19 A. Yes.

For Deerfield PreFiled Testimony, prepared by Atty Whitley for Town of Deerfield, responding to Normandeau PreFiled Expert Testimony in App 41 Review of Land Use and Local, Regional, and State Planning, Jun 2015:

TO: Deerfield Board of Selectmen (BOS) FROM: Deerfield Planning Board (DPB) CC: DCC

In November, Atty Whitley has the opportunity to bring specific questions to the NH Site Evaluation Committee (SEC) on Northern Pass Transmission (NPT). He must prepare Pre-filed Testimony to ensure Deerfield's topics of concerns are part of the record and can be raised in the adjudicative portion of the SEC process in 2017. In his email of 30 Aug 16, Atty Whitley, outlined the input needed by the SEC from Deerfield, to review and apply SEC criteria to determine how it will impact our community. DPB has reviewed the application in areas relevant to "Orderly Development," with conclusions outlined below.

BACKGROUND: Deerfield has had a **Master Plan** for many years. The previous one, from 1999, was informed by the first known use in New Hampshire of a UNH Coop Extension "Community Profile" to inform the master planning process, and garnered extensive participation. The current one, updated in 2009, benefited from additional broad community input through a Townwide Survey prepared and analyzed by the UNH Survey Center. We also have an additional chapter for our **Open Space Plan (2010)**, and for **Energy (2013)**. Deerfield also has a **zoning ordinance**, guided by our Master Plan. Many other initiatives and programs have informed the Deerfield Planning process over at least the last 30 years (**ATTACHMENT 1**)

SEC RULES: Site 301.09 Effects on Orderly Development of Region. Each application SHALL include information regarding the effects of the proposed energy facility on the orderly development of the region, **including the views of municipal and regional planning commissions and municipal governing bodies regarding the proposed facility, if such views have been expressed in writing, and master plans of the affected communities and zoning ordinances of the proposed facility host municipalities and unincorporated places**, and the applicant's estimate of the effects of the construction and operation of the facility on:

- (a) Land use in the region, including the following:
 - (1) A description of the prevailing land uses in the affected communities; and
 - (2) **A description of how the proposed facility is consistent with such land uses and identification of how the proposed facility is inconsistent with such land uses;**

Based on that Background and SEC Rules, the Deerfield Planning Board respectfully requests additional consideration of the following points:

- 1) **SUMMARY:** After careful review and consideration, it is the view of the Deerfield Planning Board that the proposed facility is inconsistent with Deerfield land uses, as expressed in writing in the master plan, zoning ordinance, and in many community planning efforts.
- 2) **ORDERLY DEVELOPMENT:** We couldn't find a definition of "orderly development" in your report. Please define what you are using for your review.
- 3) **MASTER PLAN EVALUTION:** In Sec 2 on Methodology you say that "all goals, objectives, and recommendations in local ...plans were reviewed, summarized, and evaluated." Please provide a copy of that information specific to Deerfield.

- 4) **DEFINITION OF RURAL:** "Rural Character" is often cited and important to NH communities. Deerfield identifies as a rural town. Deerfield citizens worked hard to define rural, both quantitatively and qualitatively, to guide planning. See the *Open Space Plan* (and excerpted Section C of Attachment 2). Please explain why our definition for our Town is not relevant to your conclusion.

- 5) **NPT vs DEERFIELD'S MASTER PLAN VISION AND GUIDING PRINCIPLES:**

NPT CONCLUSION: "The Project is consistent with local...long range plans." (App 41, *Local, Regional, and State Planning Conclusions*, p. 31).

MASTER PLAN VISION: "The Town of Deerfield, New Hampshire desires to maintain its character as a small, rural, but vibrant place with open space, natural beauty, and a strong sense of community. People live and move to Deerfield because of its rural and small town character, its quietness and privacy, its scenic qualities, and where a balanced mix of residents including age, economic abilities, education, professions and beliefs are valued and appreciated. These community qualities and values make our town a desirable and special place."

MASTER PLAN **GUIDING PRINCIPLES:**

- A well-managed town that controls its growth and development, keeping it in line with the existing character, appearance and beauty of the town as well as the town's tax base and ability to provide necessary services and facilities, **while protecting and enhancing its existing community, cultural, educational and natural resources**
- An attractive town that values its history, environment, scenic beauty, open space, clean water, clean air, and wildlife and seeks to protect these and other community resources through managed growth and careful planning.

Please explain the evident contradiction between the intensity of use from the scale and size of proposed NPT towers/substation expansion, and Deerfield's community qualities, values, aesthetics, and character described in the Master Plan, including the Vision and Guiding Principles.

- 6) **PREVAILING vs. FUTURE LAND USES:** In the Normandeau report, Sec 1 Introduction says "This assessment demonstrates that the impacts of construction and operation of the Project will not have an adverse effect on prevailing uses." And then you list those typical land uses. But Master Plan Visions guide future land use decisions, implemented by evolving Zoning Ordinances, and Subdivision, and Site Plan Review regs. So "no adverse effect on prevailing land uses" does not address the aspirations in a Town's Vision, nor its evolution as it shapes development through ordinances and regulations that address growth. Please explain that inconsistency, and how it addresses SEC Rule 301.09(a)2.
- 7) **LAND USE ANALYSIS:** In *Prevailing Land Use*, Sec. 4.3 Residential of your report (page 7), Dfld is included as having 22-29% of land in residential uses (RKG 2011). Existing Land Use in our *Master Plan* uses a Parcel Based Land Use Analysis which links Tax Map and Assessment data, and shows almost 50% (Vol II, Table 11, p 14). Please explain the difference.

- 8) **COMMUNITY CHARACTER**: In Sec 5.1.1 (pp13-14), NCC is summarized as identifying the importance of "landscape attractiveness, rural and community character, tourism, and real estate values." The report then says that those concerns are addressed by siting NPT within existing corridors, except 60 miles which now will be buried. While tourism may be less of a driver in Southern NH and in Deerfield, how does your report address the impacts of NPT towers proposed for Deerfield on "landscape attractiveness, rural and community character, and real estate values"?
- 9) **NPT vs SPECIFIC DEERFIELD PLANNING**: In section 5.7 on Muni Plans and Ords, you report that generally, these plans contain broad goals about development topics such as land use, economic development, and the environment. How does NPT fit into specific **Deerfield planning statements** (*excerpts attached*), informed by broad resident input, about:
- a) Maintaining the existing rural character where the natural landscape predominates over the built environment?
 - b) The intent to minimize oil and other energy imports?
 - c) Keeping more money in the local and regional economy by using more local sources of energy...?
 - d) Diversifying energy supplies to include more local supply such as wood and renewables for energy security?
 - e) A desire for a quiet town with minimal noise (vs. existing and expanded substation hum)?
 - f) The recognition that the best strategy to meet energy needs is with energy efficiency, as the cleanest, cheapest, most readily available resource?
- 10) **ZONING**: Deerfield has only one Agricultural-Residential Zone. Public Utility Facilities may be allowed by Sec 206 Special Exception: "if deemed necessary to protect the best interests of the surrounding property, the neighborhood, or the town as a whole..." (Sec. 206.2). The ZBA must impose standards to protect those interests. Please explain, specifically, how NPT will protect "the best interests of the surrounding property, the neighborhood, or the town as a whole," given Deerfield's prevailing and desired future Agricultural-Residential land use. Please specifically address the criteria defined in Sec 206.1 and 206.2, which needs conformance with no nuisance, noise, vibration, obstruction to view, character and keeping of surrounding area, protecting the best interests of surrounding property, etc.

ATTACHMENTS:

- 1) **CONSERVATION AND PLANNING IN DEERFIELD, 1987-2016**
- 2) **EXCERPTS FROM DEERFIELD, NH PLANNING DOCUMENTS**

ATTACHMENT: Conservation and Land Use Planning in Deerfield, 1987-2016

<p align="center">CONSERVATION COMMISSION</p> <p align="center">LAND PROTECTION</p> <p align="center"><i>(Green Infrastructure)</i></p>	<p align="center">PLANNING BOARD</p> <p align="center">GOOD DEVELOPMENT PRACTICES</p> <p align="center"><i>(Built/Social Infrastructure)</i></p>
<ul style="list-style-type: none"> • 1987-92 NH Land Conservation Investment Program (LCIP) \$130K grant to protect 750 acres of 7 owners, w/donations & bargain sales • 1991 Deerfield Conservation Commission (DCC) continues work on land protection • 1995 seven town Bear Paw Regional Greenway founded • 1997 Bear Paw incorporated as non-profit • 1999-2000 DCC and Bear Paw continue work on land protection • 1999-2000 DCC hosts “Dollars and Sense of Open Space” workshop on how open space contributes more in tax revenues than it uses in local services (“cost of community services”) • 2001 Use Change Tax voted to DCC for open space protection (\$50K in 2001 to start; \$50K in receipts 2001) • 2002 Deerfield Open Space Committee (DOSC #1) starts, with 16% of town protected (State and Town lands) 	<ul style="list-style-type: none"> • 1979 Master Plan (SNHPC) • 1991 State pilot <i>Natural Resource Inventory</i> (NRI), identifies significant natural resources in town • 1991 Zoning “Open Space” subdivision • 1991 Zoning requirement to consider “Open Space” subdivision if impact on NRI identified lands of special importance • 1995 <i>Community Profile</i> for Vision • 1996 Town wide survey to understand residents’ future vision for Deerfield • 1998 Developer used voluntary maximum setback from road to protect deer yard • 1996-99 Master Plan revision #1 completed (includes vision, and refers to Bear Paw on page 82, goal #12) • 1999 Developer used voluntary deed restricted 1,000 ft wide wildlife corridor through center of residential subdivision, and protects existing horse trail across land • 2000 PlanNH Deerfield Center Charrette, with gazebo, playground, senior housing built • 2000 Developer used voluntary wildlife corridor along frontage in residential subdivision (to connect to Bear Brook) • 2001 Zoning change to site plan review for commercial industrial (C/I) uses anywhere in town, with performance-based conditions • 2001-02 Zoning change to allow higher density senior housing, with C/I site plan review. Allowable density varies by distance from Town Center (9 units/3 acres w/in 1 mile, 6 units/3 acres w/in 2 mi, 1 unit/3 acres over 3 mi); 75% remains open. • 2003 CLD Plan for Pedestrian Friendly Deerfield Center and Traffic Calming • 2006 Increased setback of structures from wetlands • 2006 Reduced width for small rural roads

ATTACHMENT: Conservation and Land Use Planning in Deerfield, 1987-2016

<p align="center">CONSERVATION COMMISSION</p> <p align="center">LAND PROTECTION</p> <p align="center"><i>(Green Infrastructure)</i></p>	<p align="center">PLANNING BOARD</p> <p align="center">GOOD DEVELOPMENT PRACTICES</p> <p align="center"><i>(Built/Social Infrastructure)</i></p>
<ul style="list-style-type: none"> • 2005 -07 1st draft <i>Open Space Plan</i> for prioritized protection () • 2006-07 UNH Natural Resource Outreach Coalition (NROC) assistance with public outreach • 2009-10 DOSC #2 Input into <i>Open Space Plan</i> • 2011-12 Town Vote for Conservation Easements on all 7 Town Forests (by 70% 816 of 1,179) • 2014 Complete Easements on 7 Town Forests 	<ul style="list-style-type: none"> • 2006-07 Work with Deerfield Business Ventures Council and UNH Survey Center on town wide survey as start to Master Plan update #2 • 2007 Phased residential development • 2007 Mandatory Open Space subdivision for major subdivisions (4+lots) • 2007 pass Pleasant Lake Watershed Protection Ord • 2009 CTAP SNHPC Dfld Cmty Planning Road Map and SWOT Analysis (Jan 10) • 2009 NH HFA grant to research options for Work Force/Affordable Housing • 2009 Master Plan Update #2 and Summary (SNHPC) • 2009 NH Audubon Review of Land Use Planning Docs for Deerfield re Wildlife Habitat and Natural Resource Protection (Dec), funded by CTAP Discretionary Acct #1 • 2010 Open Space Plan w/updated NH Wildlife Action Plan data (SNHPC and DOSC #2) • 2010 Update Subdivision Regs • 2010-11 Outreach on Work Force Affordable Housing & Multi Family Options • 2011 Draft Roadway Management Plan, funded by CTAP Discretionary Acct #2 • Began <i>Broadband Chapter</i> for Master Plan • 2011 Draft Trails Plan, funded by Lamprey River Advisory Council grant • Prepare <i>Rules of Procedure</i> • 2012 Begin Lamprey River Scenic Byway planning • 2013 Update Site Plan Review Regs • 2013 Amend Pleasant Lake Watershed Prot. Ord. • 2013 NHHFA grant to update Comm Industrial • 2014 Amend Pleasant Lake Watershed Prot. Ord. • 2014 propose Village Center Mixed Use District

ATTACHMENT: Conservation and Land Use Planning in Deerfield, 1987-2016

<p align="center">CONSERVATION COMMISSION</p> <p align="center">LAND PROTECTION</p> <p align="center"><i>(Green Infrastructure)</i></p>	<p align="center">PLANNING BOARD</p> <p align="center">GOOD DEVELOPMENT PRACTICES</p> <p align="center"><i>(Built/Social Infrastructure)</i></p>
<ul style="list-style-type: none"> • 2014-16 Do Forestry Mgmt Plans & begin Timber Harvester on Town Forests, with revenue to Forestry Committee for future mgmt.. • 2014-17 Initiate plan to manage invasive Phragmites • 2014-17 Form volunteer Trails Club and start building interest and participation • 2015 Northern Pass Transmission Wetlands Permit • 2016 Defeat Petition Warrant Article to remove all funding for Conservation Fund (50% to LUCT) • 2015-16 Work with Road Agent to manage invasive Knotweed on Town Roads & conservation properties • 2016 Ongoing participation in SEC NPT process; join BOS and Plan Bd as intervenors; provide comments to Atty as Prefiled Testimony to SEC 	<ul style="list-style-type: none"> • 2015 Complete <i>Broadband Chapter</i> for Master Plan • 2015 Village Center Mixed Use #2 • 2015 Outreach on Workforce Affordable Housing • 2015 Start CIP update • 2015 Start changes to Commercial/Industrial Overlay • 2015 More revisions to PLWPO with Pleasant Lake Protective Assoc. • 2016 Pass new Business Overlay District • 2016 Join BOS and DCC as intervenors in SEC • <i>Jun 2016 300+ people attend first ever BOS hearing on NPT. All but a few opposed.</i> • <i>Jun-Nov 2016 \$10,000+ raised to crowd fund a municipal attorney to represent Deerfield</i> • 2016 Provide comments to SEC for NPT Prefiled

ATTACHMENT (2): EXCERPTS FROM DEERFIELD NH PLANNING DOCUMENTS

A. PLAN NH DESIGN CHARETTE FOR DEERFIELD CENTER (2000):

The charrette found that Deerfield Center has character and is a Town Gathering Place, with a good mix of uses. General recommendations included:

- Respect the existing structures and integrity of Deerfield's Center
- Connect the pieces of the Center
- Respect the qualities of the built environment already there

Since that work, a gazebo has been built in the Town Fields, GB White Town Offices upgraded, Senior Housing has been built and fully occupied, and The Lion Café flourishing. Work continues on complete streets / traffic calming, and resolution of the issue of a Safety Complex. The Center would be totally altered by the presence of NPT Tower along the northern boundary of The Center.

B. DEERFIELD'S VISION in *Master Plan* (2009):

"The Town of Deerfield, New Hampshire desires to maintain its character as a small, rural*, but vibrant place with open space, natural beauty, and a strong sense of community. People live and move to Deerfield because of its rural* and small town character, its quietness and privacy, its scenic qualities, and where a balanced mix of residents including age, economic abilities, education, professions and beliefs are valued and appreciated. These community qualities and values make our town a desirable and special place."

To maintain these qualities in our community now and in the future, Deerfield residents desire these **guiding principles**:

- A town that recognizes the interdependence of its residents, businesses, government and natural resources with each other, and both encourages and protects that interdependence in all aspects of the town **through communication, participation, cooperation and careful planning.**
- A well-managed town that controls its growth and development, keeping it in line with the existing character, appearance and beauty of the town as well as the town's tax base and ability to provide necessary services and facilities, **while protecting and enhancing its existing community, cultural, educational and natural resources**
- An attractive town that values its history, environment, scenic beauty, open space, clean water, clean air, and wildlife and seeks to protect these and other community resources through managed growth and careful planning.
- A safe town with well-maintained public roadways lined with stone walls and trees, where speed limits are enforced, traffic and **noise is reduced**,...

C. DEERFIELD OPEN SPACE PLAN VISION STATEMENT (2010) of Master Plan:

“A Deerfield with **sustaining rural* character**, where homes and businesses, services and recreational opportunities are set within a **functioning network of wild lands, managed forests, and working farms.**”

And DEFINING RURAL CHARACTER (from *Open Space Plan*):

Residents of the Town of Deerfield see open space as a significant component of rural character. The question of what is rural versus urban is one that challenges towns across the nation. At least two approaches to defining that rural* character are: quantitative and qualitative...

Quantitative: *The Center for Rural Pennsylvania* ... defined “rural” based on the U.S. Census definition. ... Using a modification of this definition for the state of New Hampshire, the quantitative definition of rural* could be described as follows: “A municipality is considered rural* when the population density within the municipality is **less than 145 persons per square mile** (US Census 2004) ... **Deerfield has a population density of 85.9 persons per square mile**, according to the most recent population figures available (NH OEP 2008), placing it well below Pennsylvania’s chosen population... Therefore, **Deerfield meets Pennsylvania’s quantitative definition of rural.**

In 2003, a collaborative study by The Jordan Institute and Audubon Society of New Hampshire analyzed all 259 municipalities and unincorporated places in New Hampshire, categorizing them by number of housing units and whether there was municipal water service. Deerfield was among the 41% (or 106) of communities defined as “rural*.”

Qualitative: A qualitative “rural” definition often embodies what residents see and feel, fitting less with a rigid, quantified statement. Some members of the Deerfield Open Space Committee associate “rural” character with the definition provided by *The Center for Rural America*: “Relationship to nature is a key determinant of what is rural. **When development destroys or seriously degrades the natural environment, it destroys the core basis for ruralness.**”⁴

Rockingham Planning Commission land use planner, Jill Robinson, defines “rural” as: “involving working landscapes including forestry and agriculture, where ways of life and livelihood are connected to stewardship of the land. **Rural areas include a mix of different settlement densities, interspersed with unmanaged areas, and economic uses such as tree farms, managed forests, and active agriculture....**As opposed to suburbs, rural towns include mixed land uses, mixed incomes, and mixed ages. ... **Above all, the natural landscape and areas of open space predominate over the built environment ...**

D. *ENERGY CHAPTER of Master Plan (2013):*

U.S. energy policy has had the same two goals since the days of the Oil Embargo in the 1970's:

- (a) Sustain economic growth for improved quality of life;
- (b) **Minimize oil and other energy imports.**

From the 2009 Deerfield *Master Plan*: "The Town of Deerfield recognizes that energy Efficiency is the cleanest, cheapest, most readily available resource to meet energy needs.

- **Keeping more money in the local and regional economy by using more local sources of energy, services, and food supply;**
- **Diversifying energy supplies to include more local supplies such as wood and renewables for more energy security.**

2. Reduce energy use and increase renewable and low carbon dioxide emitting sources of Energy

3. Encourage new construction or renovation that **encourages energy independence;**

- Town-wide performance based Commercial/Industrial zone (2001)
- Increased density allowed for senior housing based on proximity to Town Center (*3 units per acre w/in one mile or less, 2 units per acre greater than one mile but less than two miles, 1 unit per acre greater than two miles*) (2007)
- Reduce width for small rural roads (2005)
- Increased setback of structures from wetlands (2006)
- UNH Natural Resource Outreach Coalition (NROC) assistance with public outreach (2006-2007)
- Open Space Plan for prioritized protection (2005-07)
- Phased residential development (2007)
- Mandatory cluster subdivision for major subdivisions (2007)
- Pleasant Lake Watershed Overlay District (2007)
- Amended Open Space Development “parent lot” requirement (2008)

A VISION FOR DEERFIELD

Progress since last Master Plan

Planning Board accomplishments since the last Master Plan update include, Higher Density for Senior Housing, Pleasant Lake Watershed, Mandatory Conservation subdivisions, Commercial/Industrial Flexible Overlay.

Background

The following Vision Statement reflects the common values expressed by community residents who participated in the Master Plan Survey as well as the “Down the Road in Deerfield – You Can Get There from Here” Master Plan Visioning Session held on March 23, 2007, at the Deerfield Community School.

This Vision Statement also builds upon the Town of Deerfield’s previous Vision Statement that was adopted by the Planning Board in 1996 and used in the Town’s 1999 Master Plan.

The Master Plan Survey was conducted by the University of New Hampshire Survey Center under contract with the Town of Deerfield. The purpose of the survey was to obtain public feedback on specific areas of interest, attitudes about the Town of Deerfield and future planning initiatives for Deerfield. A total of 41 questions were contained in the survey. The survey was mailed to a total of 1,775 Deerfield postal patrons on November 24, 2006. A reminder to complete the survey was also mailed on December 12, 2006. A total of 466 surveys were completed and returned between November 24 and December 22, 2006, for a response rate of 26 percent.

The Master Plan Visioning Session was facilitated by the University of New Hampshire Cooperative Extension and the Deerfield Master Plan Advisory Committee. A total of 76



people attended the Vision Session held on March 23, 2007 at the Deerfield Community School, including UNH student facilitators and recorders.

There are many common values and shared visions expressed by those community residents who participated in both the Master Plan Visioning Session as well as the Master Plan Survey. These common values are identified in the attached SNHPC report which integrates the results of the Deerfield Visioning Session and the Town's Master Plan Survey by identifying areas of common ground. This report also includes results from the Master Plan Survey where public opinion on a particular area of concern exceeded a percentage of roughly 50% or greater.

Down the Road in Deerfield: Our Future Vision of the Town

The following vision statement reflects the common values and shared visions of the citizens of Deerfield about the future growth and development of the town. This statement offers the guiding principles and priorities upon which this master plan is based. It also serves as a statement of public policy of the town. While the vision statement does not have the force of law, local officials, boards, commissions and the public should consider the vision statement in all local municipal plans, actions and decisions.

EERFIELD'S VISION

"The Town of Deerfield, New Hampshire desires to maintain its character as a small, rural, but vibrant place with open space, natural beauty, and a strong sense of community. People live and move to Deerfield because of its rural and small town character, its quietness and privacy, its scenic qualities, and where a balanced mix of residents including age, economic abilities, education, professions and beliefs are valued and appreciated. These community qualities and values make our town a desirable and special place."



A farmhouse at Freese's Pond

To maintain these qualities in our community now and in the future, Deerfield residents desire these **guiding principles**:

- A town that recognizes the interdependence of its residents, businesses, government and natural resources with each other, and both encourages and protects that interdependence in all aspects of the town through communication, participation, cooperation and careful planning.
- A well-managed town that controls its growth and development, keeping it in line with the existing character, appearance and beauty of the town as well as the town's tax base and ability to provide necessary services and facilities, while protecting and enhancing its existing community, cultural, educational and natural resources.
- A community that encourages a well rounded mix of various housing types available to all ages, including affordable housing for the elderly, young people, and others, and tax breaks which would allow the elderly to continue to stay within their own homes. Housing is planned to enhance the character of Deerfield while protecting and minimizing the impacts on services and resources.
- An attractive town that values its history, environment, scenic beauty, open space, clean water, clean air, and wildlife and seeks to protect these and other community resources through managed growth and careful planning.
- A safe town with well-maintained public roadways lined with stone walls and trees, where speed limits are enforced, traffic and noise is reduced, and with a system in place to collect fees from new development for future road improvements that are planned to enhance the character of the town while protecting its resources.
- A well-organized community with controlled tax rates and adequate programs, facilities, utilities, and communication services to meet the needs and diversity of Deerfield residents and businesses now and in the years to come.
- A flourishing community that welcomes and offers a home for businesses, artisans, farmers, and environmentally friendly, light industrial development that can provide jobs for teenagers and others, and that provides increased opportunities for home and local business growth. Because we believe that rural and green values can co-exist with a vital economic community, we strive to cluster our businesses to prevent a draw on our natural resources and services, thereby providing a sense of community and nurturing economic vitality.
- A town that values recreation and builds upon existing opportunities both natural, cultural and social to promote recreational activities accessible to all, including the development of programs for teenagers and seniors, and a system of recreational paths and trails for walking, bicycling, horseback riding and winter sports as well as accessing services, resources, and connecting neighborhoods.



- A healthy community that values education, recognizes its responsibility to educate its children from K-12 in ways that build knowledge and skills for a changing world, and fosters a connection between the school system and the community. This also includes recognition of the need to maintain and improve the community's educational facilities and programs both within Deerfield and in collaboration with neighboring towns.
- A well-governed town with positive leadership, active participation by the community, a strong sense of commitment to public services, and communication and cooperation to meet common goals.
- The Town of Deerfield recognizes that energy efficiency is the cleanest, cheapest, most readily available resource to meet energy needs and will act on the need to reduce energy use in buildings and transportation; and to maintain land uses that absorb greenhouse gases. This will be accomplished through initiatives as the "2030 Challenge"¹, "Energy Star and US Green Building Council Leadership in Energy and Environmental Design (LEED)"² and "350/300".³

GOALS, OBJECTIVES AND STRATEGIES

The following section contains a list of goals, objectives and strategies that were developed as part of the Master Plan process. In order to develop these goals, objectives and strategies, the Planning Board utilized the previous master plan and community input collected from the Community Survey and Profile.

Goals are broad statements of ideal future conditions that are desired by the community and contained in the master plan. For example, a community may have a goal of "providing an ample stock of affordable housing." Objectives are statements of attainable, quantifiable, intermediate-term achievements that help accomplish goals contained in the master plan. For example, an objective would be to achieve "the construction of 50 units of affordable housing annually until the year 2010." Strategies are specific measures or approaches that the Town will take to further the goals and objectives.

Land Use

Goal LU-1: Promote development that will preserve the natural and cultural features that contribute to Deerfield's rural character.

Objectives:

- Encourage new development in already developed areas.
- Encourage the preservation of Open Space throughout the community.

¹ <http://www.architecture2030.org/>

² <http://www.usgbc.org/Default.aspx>

³ <http://www.350.org/> and www.target300.org



- Protect existing farmlands and prime agricultural soils.
- Limit rate and extent of development in rural areas through subdivision phasing controls.

Strategies:

- LU-1.1 Utilize the Natural Services Network⁴ (NSN) when planning for future development.
- LU-1.2 Adopt zoning regulations to further protect the Town's Wetlands.
- LU-1.3 Update the Town's existing Agricultural/Residential District to protect farmland.
- LU-1.4 Adopt the recommendations of existing SNHPC report on riparian buffers.

Goal LU-2: Guide and Promote development and growth in areas that are already developed in an effort to reduce impacts on natural resources and infrastructure and to minimize sprawl.

Objectives:

- Explore the feasibility of rezoning the historic village areas to allow higher density development and mixed uses.
- Promote growth in existing built up areas and maintain open space to minimize impact on municipal infrastructures.
- Evaluate the effectiveness of the Town's existing Commercial/Industrial Flexible overlay District in providing for orderly growth.
- Consider developing a Village District Overlay zone to promote mixed-use and small-scale commercial, public and institutional uses in concentrated village centers.

Strategies:

- LU-2.1 Identify locations in Town where existing buildings could potentially be redeveloped to create affordable live/work units for artisans and other professionals, such as the former P.K. Lindsay facility.
- LU-2.2 Develop local based initiatives to encourage low impact development.
- LU-2.3 Revise the Zoning Ordinance to include provisions for workforce housing.
- LU-2.4 Conduct an updated Cost of Community Services Study.

Housing

Goal H-1: To provide safe, affordable housing opportunities for all ages and economic levels.

Objectives:

- Provide incentives to encourage developers to include affordable, workforce housing opportunities within their residential developments.

⁴ The NSN was developed through the I-93 Community Technical Assistance Program (CTAP) to help communities identify the most important areas in the state, region, and their town for conservation to protect essential natural services.

- Revisit section 310 of existing Zoning Ordinance to make the development of multi-family dwelling units less restrictive.
- Explore the feasibility for creating a Village District that would allow mixed use and higher intensity development within the Town Villages.
- Encourage the development of additional senior housing opportunities as dictated by local demand (not to exceed the maximum allowed in Town per Section 213.13 of the Zoning Ordinance).

Strategies:

- H-1.1 Establish a Housing Commission to study and recommend housing programs and ordinances.
- H-1.2 Explore the feasibility of adopting an Inclusionary Housing Ordinance, as developed by the State of New Hampshire's Regional Environmental Planning Program (REPP) as part of the Innovative Land Use Guide.
- H-1.3 Work with outside resource agencies, such as the Southern New Hampshire Planning Commission (SNHPC) and New Hampshire Housing Finance Authority (NHHFA) to determine the level of need for affordable and workforce housing in Deerfield.
- H-1.4 Work with the Southern New Hampshire Planning Commission on the update of the Regional Housing Needs Assessment conducted every five years.
- H-1.5 Encourage rehabilitation of old farmhouses and other unused buildings to reconstruct them into multi-family housing.

Goal H-2: Change regulations to require high performance construction and renovation practices for buildings and grounds.

Objective:

- Review the existing land use regulations to identify where revisions can be made to encourage the use of energy efficient planning techniques.

Strategies:

- H-2.1 Phase in adoption of the 2030 Challenge of making all buildings carbon neutral by the year 2030 over the next two years, using the Code Equivalents provided by Architecture 2030.
- H-2.2 Consider requiring a Home Energy Rating System (HERS) sticker for all new construction and major renovations.
- H-2.3 Encourage use of the practices outlined by the US Green Building Council Leadership in Energy Environmental Design (LEED), and certification for all major projects.
- H-2.4 Review the Energy Efficient Development Ordinance developed by the state of NH's REPP in light of Strategies H-2.1 through 2.3 for additional ideas, or to suggest modifications to that ordinance.

Goal H-3: Encourage the design of housing that will be consistent with the rural character of Deerfield while offering a broad range of housing needs and opportunities.

Objective:

- Identify areas in Town that would be most suitable for seniors and workforce housing development.

Strategies:

H-3.1 Review the current land use regulations to identify any areas that could potentially be revised to encourage the development of a wider variety of housing opportunities.

Economic Development

Goal ED-1: Encourage limited economic development that will be consistent with the Town's rural character, as well as support the needs of the community, to create a sustainable local economic base.

Objectives:

- Collaborate with the Deerfield Business Association (DBA) and others to identify limited commercial and light industrial uses that would be most suitable for Deerfield.
- Work with residents to identify the areas in town where commercial and economic development would be most appropriate.
- Evaluate the flexible commercial overlay district regulations and determine if it has been effective in attracting limited economic growth.
- Explore the feasibility of utilizing grant programs through the US Department of Agriculture (USDA) such as the Rural Business Enterprise Grants (RBEG) Program, Rural Business Opportunity Grants (RBOG)

Strategies:

- ED-1.1 Review the current criteria and standards for the Commercial/Industrial Flexible Overlay District in an effort to streamline the process.
- ED-1.2 Develop a "fast track" process for commercial/industrial projects that have been nationally recognized for their "green" building and business practices.
- ED-1.3 Work with residents to identify the commercial uses that would be most beneficial to Deerfield.
- ED-1.4 Create an economic development plan.
- ED-1.5 Encourage creation of an economic development page on the town website describing town assets.

Goal ED-2: Continue to encourage the establishment of home businesses as a means of allowing residents to live and work within Town.

Objective:

- Revisit the Town's existing Home Business regulations to clearly define home occupations in an effort to ensure that the home businesses/services operating in Town are compatible with the residential character.

Strategies:

- ED-2.1 Explore the feasibility of establishing a Town Business License or some other system which can be used to keep track of the home occupations operating in Deerfield and to ensure compliance with state and local regulations.

Community Facilities

Goal CF-1: Continue to plan for and provide the best available community services at the least expense to the taxpayer.

Objectives:

- Ensure that the public health and safety needs of the residents are met.
- Ensure that the community facilities in Town can adequately support existing and future populations in Deerfield.
- Review and update the Town's Capital Improvements Program on an annual basis.
- Continue use of impact fees to help offset the cost of Town services and facilities impacted by development, such as roads, schools, recreation, etc.
- Utilize energy efficient materials, products and equipment when replacing or updating community facilities buildings and/or equipment.

Strategies:

- CF-1.1 Direct future growth to areas with sufficient/existing infrastructure.
- CF-1.2 Recommend improvements to the Town Departments whose services were ranked as "fair" or "poor" by residents on the Community Survey.
- CF-1.3 Seek to implement the recommendations set forth in the Deerfield Water Resource Plan (an appendix to the Hazard Mitigation Plan) to ensure sufficient fire protection capability.
- CF-1.4 Recommend inventorying community facilities to see if they meet current Americans with Disability Act (ADA) standards.
- CF-1.5 Recommend the School Board study whether or not there is a need for a high school or a middle school in Deerfield or the feasibility of developing a regional high school with a neighboring town(s).
- CF-1.6 Review and update the Town's Impact Fees on an annual basis.

Goal CF-2: Explore the feasibility of creating an all ages community center.

Objectives:

- Continue to work with the State Parks located within Deerfield to ensure on-going recreational opportunities.

- Explore the feasibility of creating an all ages community center in the future.

Strategies:

- CF-2.1 Continue to promote the development of integrated recreational trails as part of new developments.
- CF-2.2 Encourage development of recreational areas in close proximity to residential areas to reduce the need for additional vehicle trips.
- CF-2.3 Explore the feasibility of including “tot lots” or “pocket parks” to serve the residents within future residential developments.

Goal CF-3: Encourage the Town’s public safety facilities and equipment to adequately support the community’s needs.

Objective:

- Update the Town’s Emergency Operations Center and designated shelters to support the needs of the community in the event of a disaster.

Strategies:

- CF-3.1 Upgrade the Town’s phone system to ensure proper function in the event of an emergency (reverse 911).
- CF-3.2 Obtain generators for use in facilities designated as emergency shelters in the Town’s Hazard Mitigation and Emergency Operations Plans.
- CF-3.3 Educate the community on emergency preparedness and what to do in the event of an emergency (i.e. location of shelters, food bank, emergency operations center, etc).
- CF-3.4 Work to accomplish the implementation strategies, created to potentially reduce hazard impacts, as set forth in the Town’s Hazard Mitigation Plan.

Transportation

Goal T-1: Maintain and improve the existing transportation network in Town to provide a safe, efficient and balanced system.

Objectives:

- Establish/update guidelines for a Roadway Management Program in Deerfield
- Cooperate with adjoining communities and the NH DOT Rideshare Program to study the feasibility of a Park and Ride facility at exit 3 on NH Route 101.
- Encourage the development of foot paths and trails to connect residential subdivisions to village centers, conservation areas and other amenities.
- Encourage the installation of bike lanes especially where designated on the statewide bicycle route map.
- Cooperate with the Southern New Hampshire Planning Commission on continued regional highway improvements and alternate modes of transportation.

- Ensure subdivision and site plan regulations include traffic calming practices and road design and widths that reduce negative impact on scenic resources, Vehicular speed and pedestrian/bike safety.

Strategies:

- T-1.1 Explore the application of “Context Sensitive Solutions” when making transportation improvements in Town.
- T-1.2 Work with the Conservation Commission to prepare a trail plan.
- T-1.3 Utilize the principles of access management on transportation improvements along NH Routes 43 and 107.
- T-1.4 Adopt a Memorandum of Agreement with District Engineer for access management.
- T-1.5 Reinstate Class VI Roads Committee in order to develop a Class VI roads policy with guidance from ‘A Hard Road to Travel-New Hampshire Law of Local Highways, Streets, Trails’, a publication of the Local Government Center.
- T-1.6 Collaborate with The Town of Northwood to maintain Gulf Road to ensure access in and out of both towns in the event of an emergency or hazardous event.
- T-1.7 Continue work on traffic calming in Deerfield Center using the CLD report ‘Conceptual Traffic Calming and Pedestrian Improvements for Deerfield Center’ 2003. Evaluate the need for traffic calming within Deerfield’s other village centers through the NHDOT’S context sensitive solution program.

Natural Resources and Open Space

Goal NR-1: Recognize that the town’s natural resources and open space form the basis of the overall character and well-being of Deerfield.

Objectives:

- Utilize the New Hampshire Department of Fish & Game’s Wildlife Action Plan and other available resources to identify important natural resources and prepare strategies designed to preserve them for future enjoyment.
- Identify how the Natural Services Network (NSN) data can be utilized in Deerfield

Strategies:

- NR-1.1 Adopt the Deerfield Open Space Plan as part of the updated Master Plan
- NR-1.2 Encourage both residential and non-residential development to use NSN, and if necessary, conduct a Natural Resource Inventory (NRI) of their property so that development minimizes environmental losses.
- NR-1.3 Establish an Agricultural Commission to study, promote and protect agriculture within the community.



- NR-1.4 Propose adoption of riparian buffer regulations to protect the Town's 1st, 2nd and 3rd order streams, rivers and lakes.
- NR-1.5 Consider the adoption of ground water protection regulations and a wellhead protection program.
- NR-1.6 Preserve land through local land trusts with assistance from the Society for the Protection of NH Forests, Bear Paw, and such other organizations.

Goal NR – 2: Update the Town's local land use regulations to encourage energy efficiency and "green" design and building practices.

Objective:

- Identify how local regulations can be modified to require high performance construction and renovation practices for buildings, grounds, and neighborhoods.

Strategies:

- NR-2.0 Over time, work to phase in adoption of the 2030 Challenge of making all buildings carbon neutral by the year 2030, using the Code Equivalents provided by Architecture 2030.
- NR-2.1 Encourage use of the practices outlined by the US Green Building Council Leadership in Energy and Environmental Design (LEED), and certification for all major projects.
- NR-2.2 Promote the construction of Platinum and Gold certified buildings under the LEED program within the community.
- NR-2.3 Utilize local media to educate the community on climate change and the importance of energy conservation (via Town Newsletter, website, etc.).
- NR-2.4 Update the Town's local land use regulations to require the use of energy efficient appliances and green building practices.
- NR-2.5 Make businesses aware of potential incentives in order to encourage the use more energy efficient appliances throughout the office.
- NR-2.6 Review the Energy Efficient Development Ordinance prepared by the State of NH for additional ideas and approaches.

Goal NR-3: Update the land use regulations to specifically address erosion and sediment control.

Objective: To protect surface water quality and quantity.

Strategies:

- NR-3.1 Evaluate the Town's current site plan and subdivision regulations to determine if Low Impact Development (LID)⁵ Guidelines could be developed.
- NR-3.2 Require that the relevant "Best Management Practices" (BMPs) be used on all construction projects.
- NR-3.3 Consider the establishment of a steep slopes ordinance to restrict and/or prohibit development in areas which may have high risk of erosion and mud slides.
- NR-3.4 Work with the Code Enforcement Officer / Building Inspector to ensure that requirements of the Pleasant Lake Watershed Overlay are enforced.

Cultural and Historical Resources

Goal CHR-1: Promote the preservation and protection of its historic and cultural resources.

Objectives:

- Educate the community on the historic resources that currently exist in Town.
- Encourage the preservation of privately owned historic structures and culturally significant properties in Town.

Strategies:

- CHR-1.1 Install historic markers to identify Deerfield Center Historic District (as listed on the National Register of Historical Places) and other state or nationally recognized historic sites in Town.
- CHR-1.2 Utilize available state and federal funding programs, such as the National Trust, NH Land and Community Heritage Investment Program, and the Federal Historic Preservation Tax Incentives Program, for the preservation of historic and cultural resources.
- CHR-1.3 Encourage property owners to grant Historic Preservation Easements on privately owned properties that contain historic and cultural resources.

⁵ For more information on LID, please visit the following websites:
<http://www.lowimpactdevelopment.org/>; www.epa.gov/owow/nps/lid;
www.des.state.nh.us/factsheets/wmb/wmb-17.htm



CHR- 1.4 Update the Historic/Cultural Resources Inventory completed for the Town in 1984 by the Southern New Hampshire Planning Commission

CHR – 1.5 Explore the feasibility of utilizing Community Revitalization Tax Relief Incentive permitted under RSA 79-E

DEMOGRAPHIC TRENDS

Introduction

Population growth is driven by two factors, the natural changes including births and deaths and the net migration or change in persons entering or exiting a community. Many local and regional factors such as employment opportunities, provision of municipal services, transportation networks, natural features, cost of living, and other quality of life issues may influence the net migration and ultimately impact local population growth or decline. In turn, the changes in population will drive the demand for housing, future land development, and the need for community services for age specific populations such as schools and elder care. Population growth is both directly and indirectly tied to all aspects of local planning.

Background

Deerfield was home to over 2,000 residents in the early 1800's, reaching a peak of 2,113 residents in 1820. However, two major events, the opening of the Amoskeag Mill in the City of Manchester and the Civil War, started a decline in population growth beginning in the mid-1800's. During this time period, many young workers left the rural farm life of New Hampshire's small towns to work in the mills and later to fight in the Civil War. Over time, the continued impacts of these events, two national depressions, the Spanish Flu Epidemic, and World War I resulted in significant population loss through the turn of the century. By the Great Depression in 1929, Deerfield's population had dropped to 635 individuals.

Deerfield began to experience population growth again after World War II, at which point the town's population gradually increased through the 1950's and 1960's. After completion of the Interstate 93 highway system in 1963, the town grew at unprecedented rates. After 1980, Deerfield once again exceeded 2,000 persons for the first time in roughly 120 years. Between 1960 and 2000, the town's population has increased by 476 percent.

Between 1990 and 2005, Deerfield's population grew by just over 30 percent, while the state as a whole grew roughly 18 percent, Rockingham County grew 20 percent, and the SNHPC region grew almost 22 percent. The New Hampshire Office of Energy and Planning (OEP) estimated that the population in Deerfield was 4,272 in 2005 and 4,314 in 2006. Deerfield's population growth has been roughly in line with OEP's 2005 population estimates, which anticipated that Deerfield's population would reach 4,220 by

level has increased to seven percent.⁵ The margin of error for these statistics, however, places them on par with the 2000 census.

Existing Land Use Study

Introduction

Many factors influence a community's land use patterns. Historically, this would include natural resource constraints and opportunities, agricultural/forestry practices, and commercial/industrial development. This section of Volume II of the Master Plan describes the existing land use and zoning patterns in Deerfield and reviews the development patterns that have occurred over the past decade. This section is also designed to assist Town officials and residents in determining present land use needs and identifying future land use trends, potential impacts and conflicts and future land use policies.

The basis for the future land use recommendations in Volume I of this plan is the vision statement and goals and objectives (see Volume I, Vision Statement, Goals and Objectives beginning on page 7). The recommendations also recognize the type and distribution of existing land use activities; opportunities for and constraints imposed on, future development by the community's natural features; population and housing projections and the opinions of those who participated in "Down the Road in Deerfield – You Can Get There From Here" Master Plan visioning session held in March 2007. The recommendations also reflect the opinions of those residents of the community who responded to the Master Plan survey questionnaire distributed on November 24, 2006.

Existing Land Use Analysis

The following analysis examines the various land use categories which make up the existing land use map and compares the amount of acreage shown on the map with previous land use studies prepared for Deerfield. While differing methods were used to calculate the acreages between these various studies, the figures provide enough information to make general comparisons.

As part of the Community Survey, respondents were asked to identify what they enjoyed most about living in Deerfield. A large majority of the responses identified the rural character or rural setting. Similarly, the Regional Comprehensive Plan completed by the Southern New Hampshire Planning Commission (SNHPC) in 2006, identified the following as Deerfield's greatest regional assets:

⁵ **Note:** The 2005 American Community Survey universe is limited to the household population and excludes the population living in institutions, college dormitories, and other group quarters.



- The Deerfield Fairgrounds containing buildings and sites of historical and cultural significance.
- All of the conservation lands within the community, including portions of Pawtuckaway State Park and Bear Brook State Park.
- Open space at the Dodge and Brown property located within the eastern part of town off Mountain Road.
- King Estate open fields on Range Road near the center of town.
- Historic old center on Meeting House Road.
- Historic properties at the intersection of South and Candia Roads.

The Future Land Use Plan in the Town's 1999 Master Plan also identifies a number of strategies that the Town could use in an effort to retain the rural character and feel of Deerfield. These strategies include:

- Promoting the existing pattern of rural land uses; protecting Deerfield's valuable natural resource areas by basing future growth on the land's ability to accommodate it
- Providing adequate areas for limited industrial and commercial growth;
- Providing areas for the continuation of recreational activities, such as hiking, canoeing, fishing, etc.
- Protecting Deerfield's aesthetic and historic values to insure its continued beauty and character, which are important to its residents and non-residents alike.
- Protecting Deerfield's land in agricultural use and providing adequate protected areas for continued forest-based industries.
- Providing for a wide variety of housing types – mobile homes, apartments, multi-family, seasonal homes.
- Allowing a variety of housing types that target compatible growth to the village areas and encourage mixed land use of appropriate type, size, and character

The purpose of these policies is to:

- Decrease residential sprawl
- Revitalize the villages
- Minimize future costs for expanding public services
- Encourage more and better jobs for residents
- Help reduce the property tax burden on residential properties
- Manage growth so that fiscal and environmental impacts are minimized.

In analyzing Deerfield's existing land use, the SNHPC merged the town's most recently available parcel data with the town assessors' parcel data to create a parcel based land use GIS layer. This GIS data was utilized to tabulate the current land use acreages as presented in the following Table 11.

Table 11 provides a breakdown of the Town of Deerfield's existing land use. As illustrated, there are approximately 10,878 acres of vacant land in Town. The land use figures in the table were calculated using the Town's Assessor Data, which was also used to create the existing land use map.

**Table 11 Vol. II
Existing Land Use**

Existing Land Use	Acres	%
Residential - Single Family	15314.39	45.88%
Residential - Multi Family	1151.22	3.45%
Commercial/Industrial	422.87	1.27%
Cemetery	0.12	0.0004%
Municipal	724.78	2.17%
State Land*	3297.96	9.88%
Agricultural	133.7	0.4%
Transportation	606.22	1.82%
Utilities	276.23	0.83%
Open Water	569.94	1.7%
Conservation Land	5756	17.25%
Vacant Land	10878.26	32.59%
Total Town Area	33375.69	100%

Source: Town Assessor Parcel Data

*Included in Conservation Land

The Town of Deerfield is unique in that two state parks are partially located within its borders. Also, the Town's land area of 33,375 acres is the largest in the SNHPC region. Pawtuckaway and Bear Brook State Parks occupy roughly ten percent of the Town and an additional seventeen percent of the Town is designated as conservation land. In addition, vacant land makes up over 30 percent of the Town, but due to natural constraints, only roughly 52% (5645.63 acres) is actually developable.

Over the decades, land in agricultural use has steadily declined. At present, there is approximately 0.4 percent, or 134 acres, of land in active agricultural use in Town, compared to roughly three percent (1,022 acres) in the 1990's.⁶

The predominant land use in Deerfield is single family residential, with approximately 43 percent. Multi-family residential uses are significantly smaller, with approximately three percent. Less than two percent of the overall land uses in Town are commercial and industrial uses.

⁶ 1999 Master Plan



Table 12 Vol. II
Land and Surface Water Area Comparison

Source of Data	Total Area (acres)	Surface Waters
OEP/GRANIT	33,347.66	851.07
1999 Master Plan	33,550	765
2007 Master Plan	33,375.6	*569.94

Sources: NH OEP, GRANIT, 1999 Deerfield Master Plan, and SNHPC

*Open Waters – does not include streams

Land area calculations tend to vary depending on the source. For example, as seen in Table 12, the New Hampshire Office of Energy and Planning (NH OEP) and UNH GRANIT report there is a total land area of 32,496.58 acres in Deerfield and 851.07 acres of surface waters, which equals a total area of 33,347.66 acres. The most recent data collected for this Master Plan update indicates that surface waters represent 568.99 acres, compared to 765 acres as stated in the 1999 Master Plan. All three of the figures for surface waters vary, depending on the source, which may be attributed to the difference in calculation methods and water levels at the time the measurements were taken. The 2007 surface water calculation for “Open Water” is derived from the Town Assessors data and does not include streams, which accounts for much of the disparity. The most accurate source of data is likely the OEP/GRANIT data which includes streams.

Existing Zoning Ordinance Analysis

The Town of Deerfield’s Zoning Ordinance divides the Town into the following six districts:

- The Agricultural-Residential District
- The Wetland Conservation District
- The Floodplain Overlay District
- Commercial/Industrial Flexible Overlay District
- The Senior Housing Overlay District
- The Pleasant Lake Watershed Overlay District

Agricultural-Residential District (AR)

The 1999 Master Plan states that “most of Deerfield (98 percent) is in one zoning district - AR, which is a rural residential, low density zone which permits primarily single family homes.” The extent of this district has remained largely unchanged at the time of this master plan update in 2008 and the town remains largely zoned AR with several overlay districts.

The AR Zone allows a number a different uses, such as agriculture, single-family, two-family and seasonal residential units, manufactured housing, senior housing, home occupations, portable saw mills, Bed and Breakfast, and accessory apartments. Additionally, a number of uses, such as multi-family, and limited commercial and industrial uses, are also allowed by Special Exception. The lot area and dimensional



requirements require a minimum lot size of three acres; a 200 foot road frontage; 40 foot front setback; 37.5 side yard setbacks; and 37.5 rear yard setbacks. The maximum building height is 35 feet, unless specified otherwise.

Zoning Overlay Districts

Wetland Conservation District

The Wetland Conservation District was created in order to protect the health, safety and welfare of the public by regulating the use of land that is located in areas found to be subject to high water tables for extended periods of time. The permitted uses in the Wetlands Conservation District depend on the rate of soil infiltration on the site.

Appropriate development on poorly drained soils is limited to agricultural uses, which do not create significant increases in surface or groundwater contamination by use of pesticides and do not contribute to soils erosion. Some examples include grazing, hay production, forestry, tree farming and wildlife management.

Soils that are very poorly drained can have the same uses as poorly drained soils except alteration of the land, such as dredging and filling is prohibited, as well as the construction of any structure other than fences, catwalks, and wharves, provided they are constructed on posts.

Floodplain Overlay District

The Floodplain Overlay District applies to lands that are designated as special flood hazard areas by the Federal Emergency Management Agency (FEMA) as identified in the Flood Insurance Rate Map (FIRM) dated May 17, 2005. These regulations overlay and supplement the Town's Zoning Ordinance and are considered part of the Zoning Ordinance. Any development within the special flood hazard area requires a building permit and must adhere to specific provisions. The purpose of these provisions is to prevent or minimize damage and destruction to structures in the event of a flood.

Commercial/Industrial Flexible Overlay District

The purpose of the Commercial/Industrial Flexible Overlay District is to encourage flexibility in the development of commercial and industrial uses throughout Town. This Commercial/Industrial Flexible Overlay District is a floating zone that has written standards to ensure that any undesirable impacts from proposed projects are minimized. Currently, commercial/industrial development can be located anywhere in Town, provided the proposed development meets the Flexible Overlay District criteria and standards, as listed in the Zoning Ordinance.

One advantage of the Flexible Overlay District is that it allows for flexibility in locating commercial and industrial development throughout town, whereas traditional zoning would only allow commercial/industrial uses in designated zones. However, the application process for the Flexible Overlay District requires that specific criteria and

standards are met, in addition to the three phase application process, which can seem tedious and may discourage some applicants.

Another disadvantage is that the flexible zoning does not provide many safeguards for abutting landowners when businesses change ownership and use...the impacts and traffic patterns may change within a neighborhood. Also, there is no incentive to achieve smart growth principles within the town such as clustering higher intensity uses near a village center as commercial/industrial uses can be spread out all over the town leaving haphazard and unplanned growth patterns.

The same lot area and dimensional requirements apply to the Commercial/Industrial Flexible Overlay District as the Agricultural-Residential Zone.

To prevent a sprawling landscape, the town could consider following options:

- Option A-** Concentrate commercial growth around the existing villages
- Option B-** Concentrate growth along vehicular corridors
- Option C-** Provide incentives to encourage commercial development along transportation corridors and/or village centers
- Option D-** Strengthen home business zoning regulations/Allowed use
- Option E-** Eliminate the flexible Overlay District and establish commercial/industrial districts.

Senior Housing Overlay District

The Senior Housing Overlay District, which was approved by the voters at the 2001 Town Meeting, was developed to promote affordable housing for senior citizens as well as preserve the open space that contributes to Deerfield's rural setting. The Senior Housing District applies to those developments for persons 62 years of age and older. The number of senior housing developments in Deerfield is restricted to no more than ten percent of the total number of dwelling units that exist at the time the determination is made, but does not include units already set aside for senior housing

Senior housing is permitted in the AR District and must have a minimum lot size of three acres. The number of units permitted in a development is one to three units per acre, depending on the distance the furthest extent of the property is from the common intersection of Old Center Road South (Church Street), Candia, North and Raymond Roads (i.e. the closer to the intersection, the higher the density). The developments must have a 200 foot frontage and 50 foot front, side and rear building setbacks. Each unit is restricted to a maximum 2 bedrooms and maximum lot coverage of 25 percent. Each unit must also have at least 400 square feet of living space, with 2-bedroom units having a minimum of 600 square feet. Each Senior housing development is also required to have a community building for its residents to utilize as a place of assembly and to provide the needed amenities.

Deed restrictions and covenants are recorded with the Rockingham County Registry of Deeds in order to ensure that the developments remain as a senior housing development in perpetuity. Additionally, each development must develop a Homeowner's Association and Articles and By-Laws, which are to be submitted in advance to the Planning Board and Town Counsel for review.

Pleasant Lake Watershed Overlay District

The Town of Deerfield adopted the Pleasant Lake Watershed Overlay district and accompanying regulations on March 13th 2007. This overlay district was approved to help ensure adequate protection of Pleasant Lake and its watershed from the effects of point and non point source pollution, including sedimentation. The watershed district is intended to protect everything ranging from public health to surface water, aquifers and wetlands. All development proposals and subdivisions and site plans and potential contaminating activities within the watershed are subject to the requirements set forth in Section 330 of the Zoning Ordinance.

Open Space Development

Conservation Development or Conservation Subdivision is a development option allowed under NH RSA 674:21 I (f). In Deerfield, the approach is referred to as an Open Space Development (OSD). The purpose of this overlay zone is to provide a method of development for land that permits variation in lot sizes and housing placement, and provides for the protection of natural, environmental and historic land features and a reduction in road length. The intent is to allow subdivisions with varying lot sizes to provide homebuyers a choice of lot sizes and homes according to their needs and preserves open space, tree cover, scenic vistas, natural drainage ways and outstanding natural topography.

In Deerfield, open space developments are required for all subdivisions greater than twelve acres. The Planning Board can grant exemptions from this requirement if the applicant can demonstrate that there are mitigating circumstances that prevent the land from being developed as an open space development.

The number of dwelling units permitted in an open space development cannot exceed the number of units that would be permitted under a conventional subdivision layout plan. Unlike a conventional subdivision, an open space development must designate at least 50 percent of the gross tract area as open space.

Recent Subdivision and Site Plan Activity (from Town Reports)

Due to the recent downturn in the housing market, like many communities nationwide, the Town of Deerfield experienced a decline in the number of residential subdivisions and site plan activity from 2005 to 2006. According to the 2006 Town Report, the

Deerfield Planning Board approved fifteen subdivisions that created 52 new building lots, and two residential site plans that created 91 elderly housing units. Additionally, conditional approval was granted to two subdivisions which created 68 lots. In 2007, the Planning Board approved seven subdivisions and six conditionally approved subdivisions which created a total of 99 new building lots. Additionally, one non-residential site plan was approved. These figures are down from the last few years where in 2005 there was the approval of twelve subdivisions, with the potential of creating up to 200 lots, and three approved site plans, and more recently, in 2006 with the approval of 120 new residential building lots and 91 units of elderly housing.

Overall Land Use Trends

The Town of Deerfield covers approximately 52 square miles and has about 70 miles of roads. The Town is largely composed of single family residential dwellings that are randomly separated on lots fronting upon pre-existing town roads and state highways.

Historically older settlements such as Deerfield Center, Deerfield Parade and South Deerfield are conspicuous by their more closely developed residential structures. A number of the settlements are associated with the town's early history and are considered to be good examples of the architectural styles which were popular in the various periods during which these settlements were established.

The Town of Deerfield originally adopted its Open Space Development Ordinance in the 1990s. The original ordinance was superseded in 2005 and revised further in 2007. The intent of the Open Space Development Ordinance is to discourage sprawl, preserve natural resources and open space, avoid development on naturally constrained lands, and to provide housing opportunities for persons of various income levels, ages and needs.

At the 2007 Town Meeting, an amendment was adopted making it mandatory that all residential subdivisions over twelve acres, as opposed to sixteen acres, be Open Space Subdivisions. Prior to the recent mandate on residential subdivisions over twelve acres, there was very little interest from developers to build open space subdivisions.

Since the inception of the Open Space Subdivision Ordinance, and prior to the recent amendments, there were only two elective Open Space Subdivisions constructed in Deerfield and four Open Space Subdivisions have been approved, two of which were elective (Cotton Wood Estates and Sawyer Farms) and two that were required (High Meadows and Forest Glen).

Furthermore, according to permit data collected by the New Hampshire Office of Energy and Planning, there was a 2.57 percent increase in residential dwelling units in Deerfield during the period from 2005 (1,672 units) to 2006 (1,715 units). Residential uses make up almost 50 percent of the total land acreage in Town. The 1999 Master Plan reported that residential land use comprised only nine percent of the Town's total land area.

A potential reason why the 2007 figure is significantly higher than the 1999 figure may be due to a difference in data collection methods, i.e. the current land use data was calculated using parcel based data, whereas the 1999 figure may have been obtained through a land use based method. Deerfield is one of many communities within the SNHPC Region where this trend of increasing residential land use can be seen.

Table 13 Vol. II
Residential Units by Type, 2006

Municipality	Population	% of Sub-area	One Family (Units)	Two Family (Units)	Multi Family (Units)	Manufactured Housing (Units)	Total Residential (Units)	% of Sub-area
Candia	4,091	11%	1,380	20	24	50	1,474	11%
Chester	4,642	13%	1,383	33	21	29	1,466	11%
Raymond	10,780	29%	2,619	165	531	911	4,226	31%
Deerfield	4,314	12%	1,472	65	10	136	1,683	12%
Hooksett	13,201	36%	3,265	265	1,103	216	4,851	35%
Sub-area Total	37,028	100%	10,119	548	1,689	1,342	13,700	100%

Sources: NH OEP 2006 Population Estimates and the SNHPC 2006 Land Use Report

As seen in Table 13 above, homes in Deerfield are predominately single family residential units, which is similar throughout the SNHPC Region.

Historic Town Villages⁷

As Deerfield developed and grew in population a number of distinct centers within the Town began to appear.

The **Parade**, located on an elevated position on the main road from Portsmouth to Concord was a center of activity in trade and entertainment. Several stores and taverns flourished doing a brisk trade with the passing travelers. The settlers who developed the Parade area were of an affluent and intellectual nature. Their concern for the betterment of the Town's younger population led to the establishment of a high school called the Academy in 1798. The Academy was supported by the Parade area residents and resulted in a large number of well educated students who went on to become noted and respected personalities.

Rand's Corner located a few miles northwest of the Parade on the same highway was also a center of trade. Several taverns catered to the needs of travelers while a good deal of space was devoted to trade among locals and residents of the surrounding area. Included in the merchandise were such things as molasses, salted fish, rum, farm goods and barrels.

⁷ Deerfield 1999 Master Plan



The **Old Center** (Deerfield Center) located southwest of the Parade is the highest point of land capable of successful cultivation. This area was the early focal point of Deerfield's official community activity. The first town meeting house was built here with the field around it used for musters and other activities. When New Hampshire was preparing to establish its capital city, the Old Center was considered as a possible site.

The South Road area is located in the south central portion of the Town. This section of Deerfield developed into a prosperous business area during the Town's development. Lumber production was a major industry along with potash manufacture and a shoe and boat manufacturing business established by Joseph J. Dearborn.

Deerfield owes much to the early settlers who made their homes within her boundaries. Their talents and abilities together with a broad community spirit produced the foundation upon which the present day Deerfield has grown.

Each of Deerfield's villages has a unique history and mix of land use and includes the **Deerfield Parade, Deerfield Center, Rand's Corner, Leavitts Hill and Butler's Corner** in south Deerfield. They each have their own identify and vital role to play in Deerfield's future just as they have in the past. The rural New England village is an important part of the heritage of a town like Deerfield and needs to be protected. Villages can assimilate new development and actually benefit from it, if land use controls are designed to do so.

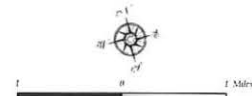
The Town of Deerfield's current zoning ordinance would not permit Deerfield's existing villages to be built today.

MAP 12

Old Village Centers

TOWN OF DEERFIELD

-  Old Village Centers
-  Town Boundaries
-  Deerfield
-  Conservation Land
- Road Classes**
-  State Maintained Roads
-  Town, Local, and Private Roads



Data Source:
NH GRANIT Digital Data (1/24/00)
NH Department of Transportation
Town of Deerfield
SNHPC

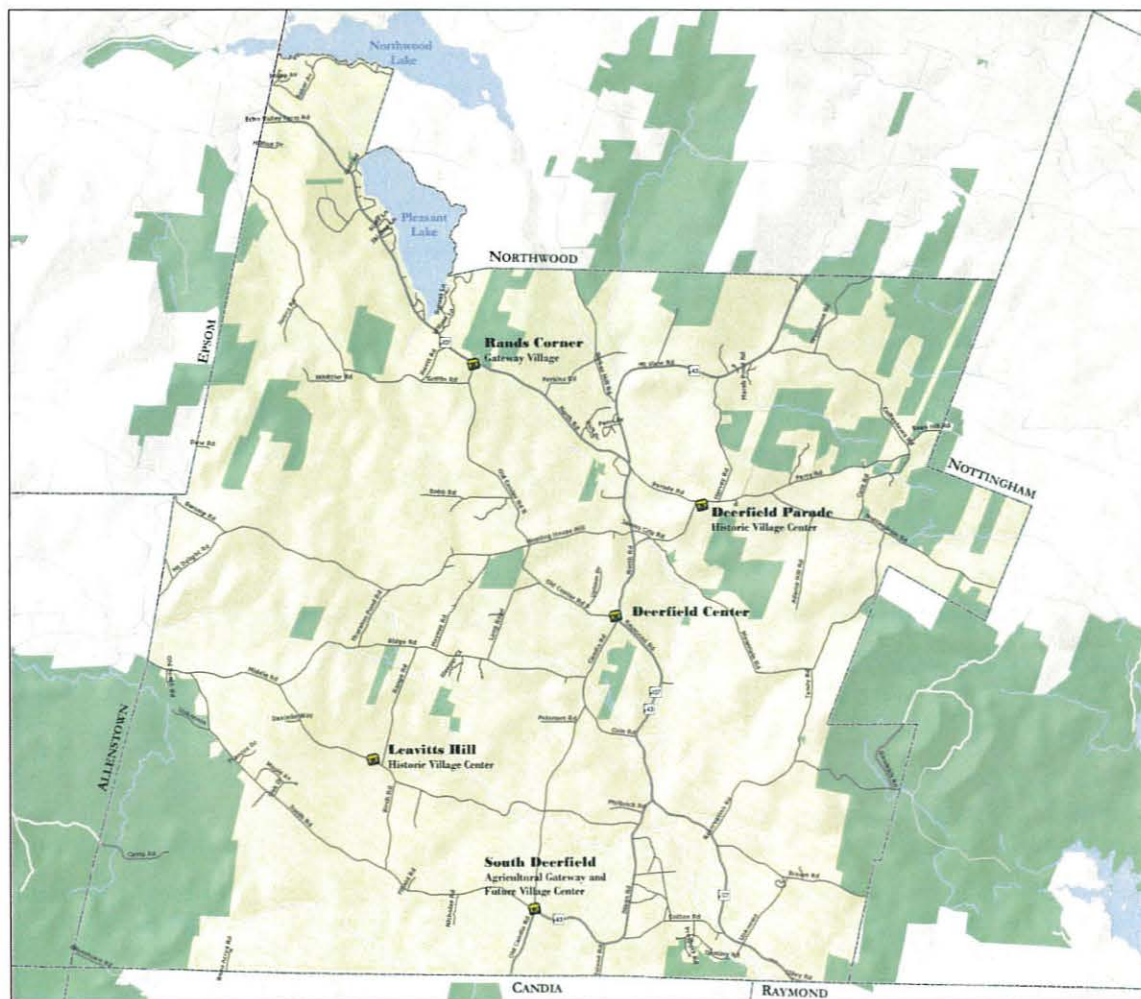
The individual municipalities represented on this map and the SNHPC make no representation or guarantee to the accuracy of the features and designations of this map.

Map Produced by:
GIS Service SNHPC 2007
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This map is one of a series of maps that were produced as part of a Towns Master Plan 2007 and for planning purposes only. It is not to be used for legal boundary determinations or for regulatory purposes.



New
Hampshire
Location
Map



LAND USE

Introduction

The management of land use patterns is fundamental to all other aspects of community development. Planning and managing land use at the local level can establish land use relationships within a single town and among neighboring towns that complement rather than compete with each other. The basic purpose of public land use regulation through planning, zoning and site standards is to segregate incompatible uses. The public thereby benefits in a variety of ways including protection of capital investments, protection of environmental quality, and ensuring the coordinated development of public services and infrastructure, such as roads, emergency services and schools.

Background

The Town of Deerfield's Zoning Ordinance divides the Town into the following districts: the Agricultural-Residential District (AR); the Wetland Conservation District; the Floodplain Overlay District; Commercial/Industrial Flexible Overlay District; the Senior Housing Overlay District; and the Pleasant Lake Watershed Overlay District.

The 1999 Master Plan states that "most of Deerfield (98 percent) is in one zoning district - AR, which is a rural residential, low density zone which permits primarily single family homes." This remains largely unchanged at the time of this master plan update in 2007 in that, for the most part, the town remains largely zoned AR with several overlay districts.




Rural homes in Deerfield

The AR Zone allows a number a different uses, such as agriculture, single, two-family and seasonal residential units; manufactured housing, senior housing, home occupations, portable saw mills, Bed and Breakfast, and accessory apartments. Additionally, a number of uses, such as multi-family, and limited commercial and industrial uses, are also allowed by Special Exception. The lot area and dimensional requirements require a minimum lot size of 3 acres; a 200 foot road frontage; 40 foot front setback; 37.5 side yard setbacks; and 37.5 rear yard setbacks. The maximum building height is 35 feet, unless specified otherwise.

MAP 2


Existing Zoning TOWN OF DEERFIELD

 Town Boundaries


 Conservation Land

Road Classes


 State Maintained Roads


 Town, Local, and Private Roads


Zoning

 Agricultural/Residential:
33347.66 acres, 100%

Zoning Overlays

 100 Year Floodplain Overlay:
2402.21 acres, 7.2%

 Senior Housing Overlay:
33347.66 acres, 100%

 Commercial Overlay:
33347.66 acres, 100%

Total Acreage, Existing Zoning = 33347.66

*Overlay percentages are a percentage of the existing zoning total acreage

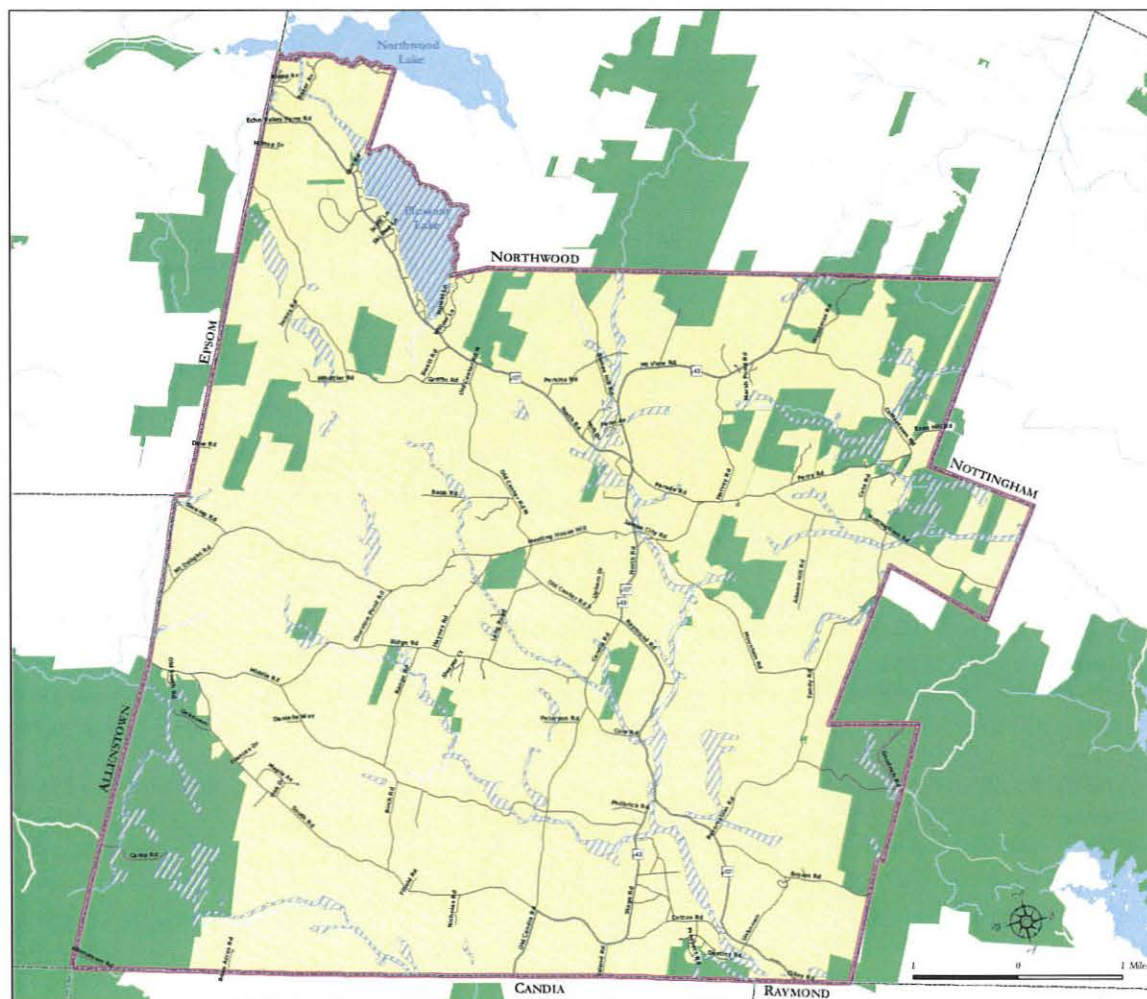
Data Sources:
NH GRANIT Digital Data (1:24,000)
NH Department of Transportation
Town of Deerfield
SNHPC

The individual municipalities represented on this map and the SNHPC make no representations or warranties as to the accuracy of the features and designations of this map.

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New
Hampshire
Location
Map



The Town of Deerfield also has several overlay districts in addition to their AR zone. There is a Wetland Conservation District, a Floodplain Overlay District, a Commercial/Industrial Flexible Overlay District, and a Senior Housing Overlay District. The Wetland Conservation District was created in order to protect the health, safety, and welfare of the public by regulating the use of land that is located in areas found to be subject to high water tables for extended periods of time. The Flood Plain Overlay District applies to lands that are designated as special flood hazard areas by the Federal Emergency Management Agency (FEMA). These regulations overlay and supplement the Town's Zoning Ordinance and are considered part of the Zoning Ordinance. The purpose of the Commercial/Industrial Flexible Overlay District is to encourage flexibility in the development of commercial and industrial uses to occur throughout town. This Commercial/Industrial Flexible Overlay District is a floating zone that has written standards that will ensure that any undesirable impacts from the proposed projects are minimized. The Senior Housing Overlay District was developed in order to promote affordable housing for senior citizens, as well as to preserve the open space which contributes to Deerfield's rural setting.

Build-Out

Build Out Results⁶

A build-out or a growth capacity analysis is a planning tool based on a theoretical condition that exists when all available land suitable for construction is developed. The analysis estimates the maximum number of housing units that would exist when build-out is complete and what the population of the town could be at that time. The calculations are driven by the community's existing land development regulations and the supply of "buildable" land.

This analysis was performed with the use of an advanced Geographic Information Systems (GIS) software program called Community Viz. The process involved multiple steps using available data from the Town, the regional planning commission, and New Hampshire GRANITE's database at the Complex Systems Research Center. Maps were created to illustrate the analysis in a graphic format. Calculations were performed to determine the total number of acres, commercial floor area, dwelling units, and population that could be expected if all the identified "buildable" parcels in the community were developed as set forth by the town's existing zoning regulations.

One of the primary benefits of a Build-Out Analysis is that it can show how much land area could be developed under existing land use regulations and where this development could occur within a community. It can also show how many residential dwelling units, or how much commercial floor area could be developed and how much the population of the community could increase at full build-out. The existing zoning ordinance, especially the density requirement, determines the build out.

⁶ For the full build out analysis, please see Volume II of this document

Future Land Use Recommendations

Village Land Use District

The establishment of Village Districts in the Town's Zoning Ordinance and Zoning Map are recommended. This recommendation is supported by the Planning Board, as well as the Community Survey results with 41 percent of respondents stating that they were in favor of promoting village centers/clusters. The intent of this new district would be to create an opportunity to expand neighborhood commercial development, expand age restricted and workforce housing opportunities in the Historic Town Villages determined to be most suitable. The Village District would regulate development of the Historic Villages to maintain the community's rural, small town character. This character is dependent upon preserving architecture and a mix of commercial and residential uses in these districts.

Zoning regulations for the Historic Village Districts should allow for a mix of uses. The development of architectural guidelines should be considered to develop a consistent architectural style throughout the Village Districts. Fire protection, lighting, open space, suitable parking, and pedestrian issues should also be investigated and addressed as part of the development of the Village Districts. Where feasible, traffic in the Village Districts should be reduced by re-routing through traffic or by applying other solutions such as traffic calming techniques.

Low Impact Development

Low Impact Development (LID)⁸ is a stormwater management strategy concerned with maintaining or restoring the natural hydrologic functions of a site to achieve natural resource protection objectives. Developed in the mid-1980s, LID addresses stormwater through small, cost-effective site design and landscape features that are distributed throughout the site. The goal of LID is to mimic a site's predevelopment hydrology by using design techniques that infiltrate, filter, store, evaporate, and detain runoff close to its source. LID techniques include conservation of forests and sensitive waters, water reuse, and stormwater controls that detain and retain runoff.

The LID approach includes five basic tools, as follows:

- 1 Encourage conservation measures
- 2 Promote impact minimization techniques such as impervious surface reduction
- 3 Provide for strategic timing by slowing flow using the landscape
- 4 Use an array of integrated management practices to reduce and cleanse runoff
- 5 Advocate pollution prevention measures to reduce the introduction of pollutants into the environment

⁸ For more information on LID, please visit the Low Impact Development Center's website at www.lowimpactdevelopment.org/home.htm; the EPA Office of Water website at www.epa.gov/owow/nps/lid/; or New Hampshire Department of Environmental Services (DES) www.des.state.nh.us/factsheets/wmb/wmb-17.htm



The Planning Board should evaluate the Town's current Site Plan and Subdivision Regulations to determine if LID Guidelines could be developed for Deerfield. At a minimum, the Town should review the existing stormwater regulations to identify where LID techniques could be implemented.

It is recommended in this plan that this be accomplished by implementing the following techniques:

- 1 First, by updating the zoning to create a new Village District zoning designation
- 2 Second, by enhancing the historic character of the Historic Village Centers through architectural design standards
- 3 Third, through implementing the characteristics of livable and walkable communities.

Housing Report

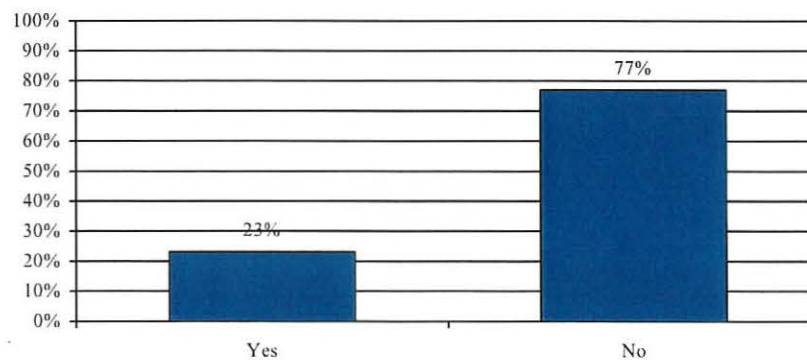
Community Survey Results

During the fall and winter months of 2006, the University of New Hampshire Survey Center conducted a community-wide master plan survey for the Town of Deerfield. The purpose of the survey was to obtain information about specific areas of interest and attitudes of town residents about the services and activities of the Town of Deerfield as well as future planning initiatives for Deerfield. On November 24, 2006, 1,775 surveys were mailed to all Deerfield postal patrons and a reminder notice was mailed out on December 12, 2006. Between November 24 and December 22, 2006, 466 Deerfield residents responded to the survey for a response rate of 26 percent.

The two questions identified below directly relate to issues and needs of housing in Deerfield.

Housing Survey Questions

Question 6: *Do you feel it is the Town's responsibility to provide housing that is affordable for people with a limited income?*



Overview

Open space planning in New Hampshire is an ongoing activity led mainly by conservation commissions and planning boards. Volunteers from the Town of Deerfield have created this Open Space Plan, with an initial draft in 2006, and this update in 2010:

- To outline the benefits of open space,
- To explain the need for both land protection and changes in land use practices,
- To prioritize criteria for land preservation within a larger green infrastructure, and
- To identify voluntary and regulatory strategies to maintain healthy and functional green infrastructure network as the town continues to grow.

Between 1990 and 2008, Deerfield has grown from a population of 3,124 to 4,366, an increase of almost 40%. The population is projected to increase to 5,204 by 2015, an increase of 19% (NH OEP). This does not incorporate additional growth resulting from the widening of Interstate 93.

The development associated with this growth threatens the rural character and the open space of the town identified as important elements to retain in the master plan. Open space has many economic, social, health, and environmental benefits; and this plan will help to maximize those benefits while helping to shape growth and protect essential ecological functions.

A green infrastructure open space network provides many benefits for Deerfield citizens, including:

- **Economic:** Cost of community services studies, including one specific to Deerfield completed by Phil Auger of the UNH cooperative extension, show that towns that maintain open land and manage growth save hundreds of dollars per family in infrastructure costs for roads, safety services, and other municipal expenses.
- **Health:** Open space lands, particularly in the form of forested areas and aquatic buffers, filter pollutants out of the air, and provide the water supply that allows for continued growth and development.
- **Rural character:** Deerfield, a town that prides itself on its rural qualities, adds aesthetic and social value through open space lands.
- **Recreation:** Deerfield residents can benefit from a host of recreational opportunities afforded through open space.
- **Ecology:** Open space lands support and preserve the unique biodiversity and wildlife habitats contained in Deerfield.

The open space priorities are determined through a social and environmental inventory, determining the needs of the town for recreation, affordability, health, aesthetic value, and wildlife habitats. The environmental inventory includes water, soils, habitat, forests, and a number of other elements. When these elements are layered on each other the areas with the highest value for open space protection become evident.

A series of Geographic Information Systems (GIS) maps based upon data prepared through GRANIT, Bear-Paw Regional Greenways, New Hampshire Fish and Game and the Society for the Protection of New Hampshire Forests have been developed to provide an inventory of

all the critical area overlays in Deerfield (see Appendix A). The maps show the known locations of open space resources. The basis of this plan is formed by the recognized need to protect the pattern of resources, particularly where several resource characteristics overlap. Areas having a concentration of open space values represent resource lands that should remain in their natural condition to preserve water quality, wildlife habitat, recreation opportunities, sustainable timber resources, historic settings, potential greenways, and the scenic quality of the Town. Protecting these resource areas from development contributes to the quality of life in Deerfield while also helping the tax base. The natural areas within Deerfield that should be considered for protection from development include remaining large areas that have no or minimal roads and homes, hydric soils and wetlands, aquifers, floodplains, prime agricultural soils, steep slopes, forested lands, wildlife habitats, and important connectors between the unbroken large areas of undeveloped lands.

The Open Space Plan outlines a clear implementation procedure and timeline to allow for more sustainable open space and development practices and taking specific actions on open space priorities. The plan answers potential questions on actions and management strategies, such as conservation easements, conservation subdivisions, and taxes on open space lands.

The Open Space Plan is a guide for the community to document the need and suggest strategies for maintaining a functioning network of open lands. The two main avenues to do so are (a) land protection, and (b) changes in land use practices.

LAND PROTECTION: For a century, New Hampshire has been a leader in land protection, beginning with the creation of the White Mountain National Forest in 1911. Over the past few decades, thousands of cities and towns across the state and country have voted to spend millions of dollars to protect lands. Recently, a number of communities within the Southern New Hampshire Planning Region, including Auburn, Londonderry, Bedford and Chester have all enacted bond issues of over a million dollars each for land protection. The primary needs in these communities are to preserve key open space areas in order to manage development, protect natural resources, and maintain the community's character, while managing growth and stabilizing the tax rate.

LAND USE: Within the last few years, natural resource scientists and land use experts in New Hampshire have started to work together to change land use practices within zoning and subdivision ordinances, recognizing that current development practices create suburban, rather than healthy rural, communities. Deerfield's zoning that requires open space developments for major subdivisions is one such example of trying to balance development and maintaining rural character.

The intent of this Open Space Plan also is to help the town to identify, prioritize, and protect the Town's remaining high value open spaces. The Deerfield Open Space Committee will continue to explore options for protecting key properties, areas, and connections possessing qualities that define the character of the community, including well-managed forests and tree farms, as well as unique habitats that provide shelter for rare plants and exemplary animal communities, groundwater protection areas, and essential ecological function.

Town of Deerfield, New Hampshire Goals and Key Actions for Deerfield's Open Space Plan

The Deerfield Open Space Committee will be considering the following suggested goals and key actions for this Open Space Plan. The goals are intended to serve as guiding principles for open space planning in the Town of Deerfield. These items should be reviewed on an annual basis in order to keep them current with the Town's strategies for open space planning.

Key actions indicate specific courses of action, aimed at the achievement of the broader goal. Generally, the key actions are attainable and measureable. They identify the types of things that should be done by local officials, boards, Town departments and the voters to help achieve the goals. Active citizen participation is a key element of this plan, in order to achieve the results of open space conservation and protection.

The following Vision, Goals and Key Actions are recommended as an integral part of this Plan:

Vision Statement:

"A Deerfield with sustaining rural character, where homes and businesses, services and recreational opportunities are set within a functioning network of wild lands, managed forests, and working farms."

From the Deerfield Open Space Committee, Initial Meetings, February 2002 and updated at the Deerfield Open Space Committee Meeting of July-September 2005.

Goals:

1. Implement COST-EFFECTIVE means to preserve land to have the greatest overall tax and revenue benefits for Deerfield citizens.
 - 1.1 Recognize open space as an important component of a smart growth program to curb sprawl.
 - 1.2 Identify means of land protection to best utilize available funding and tax benefits offered by state, federal, and non-profit agencies.
 - 1.3 Clarify the relationship between open space lands and tax revenues for the Town of Deerfield.
2. Establish development and subdivision zoning REGULATIONS AND ORDINANCES for Deerfield to encourage smart growth, preserve open space, and make the Town economically sustainable.
 - 2.1 Adopt the Open Space Plan as an official part of the Town's Master Plan.
 - 2.2 Amend the Town's Open Space Development Regulations to tie individual projects within the overall functioning network of open space as presented in the Open Space Plan. Also consider adding new practices and techniques to the regulations that can help preserve the community's rural character and protect sensitive environmental features.

- 2.3 Explore mechanisms such as a Rural Features Overlay District, a Density Credit Overlay District, and/or the Transfer of Development Rights which allows increased density (i.e. above and beyond that permitted by current zoning) in exchange for protecting specific rural features and open space such as undeveloped road frontage, view points, viewsheds, fields and pastures, steep slopes, vegetated stream corridors, etc.
- 2.4 Develop performance regulations to zone land according to the performance of the site and the impact its activities have upon surrounding areas, such as noise, pollution, light, and traffic flow.
- 3 Identify the CRITERIA the Conservation Commission/Town of Deerfield/Planning Board will use when considering potential lands for open space preservation.
 - 3.1 Lands within the most current Green Infrastructure Open Space Network.
 - 3.2 Protect Deerfield's most sensitive natural areas, including prime wetlands, aquifers, vernal pools, streams and lakes, wildlife habitats (including wildlife corridors), old forest stands, and agricultural soils to protect the environment and to balance growth and development with quality of life.
 - 3.3 Connect un-fragmented areas with guidance based on local knowledge from residents, scientists, and land trusts.
 - 3.4 Preserve the natural and cultural resources provided by Deerfield's scenic views, Class VI Road system, trails, and culturally and historically significant lands.
 - 3.5 Continue to work with land trusts and state and federal agencies to develop a natural greenway and trail system consisting of public and private protected lands linking Bear Brook State Park, Pawtuckaway State Park and Northwood Meadows State Park.
 - 3.6 Work with the NH Coastal Watershed Land Protection Program, through the Nature Conservancy, NH Estuaries Project, and regional planning commissions, to establish priorities for preservation.
 - 3.7 Work with neighboring towns to connect the green infrastructure and to create linkages for open space on a regional basis

EDUCATE the residents of Deerfield of the multiple economic, health, ecological, and recreational benefits of Open Space.

- 4.1 Define "rural" and establish open space as a significant component of rural character.
- 4.2 Identify the economic benefits of open space to the town's tax base and land values.
- 4.3 Identify the health hazards that can arise from nonpoint pollution sources in groundwater and air and recognize the role of open space in clean water and good air quality.
- 4.4 Outline the recreational potential of open space lands through Class VI roads, trails, and parks.
- 4.5 Demonstrate the importance of open space for wildlife habitat.

Section 1

OPEN SPACE—BENEFIT OR BURDEN?

While open space offers many economic, social, and environmental benefits, many myths abound over the societal costs of open space preservation. Using current academic and industry studies on the effects of open space on property values, tax rates, growth rates, and density, this section seeks to uproot misconceptions about open space maintained through either land protection or development practices.

Land Protection: New Hampshire has a 100+ year history of land protection initiatives, starting with the White Mountain National Forest in 1901. The answers to the questions below come from a century of experience and data.

Doesn't the cost of land protection eventually come back to the taxpayers?

The costs of open space land are rarely attributable to a single source, but taxpayers rarely see increases due to open space protection and the increases that they do see are negligible. There are three costs associated with open space land, purchase/acquisition, taxes, and maintenance; each varies depending on the open space arrangement.

Town purchase/easement: The Town of Deerfield has committed a portion of its land change tax to go towards land protection, at the discretion of the Conservation Commission. From 2001 until 2005, 100% of the tax went to land protection. Starting in 2006, 50% of the land change tax goes to land protection until a cap of \$500,000 is reached. These funds can be used towards conservation easements or direct purchase of land. In the case of conservation easements, the most popular form of conservation, the land owner continues to pay current use taxes on the land, resulting in no loss of taxes. If the town purchases the land, the land is removed from the tax rolls, so that is not the preferred choice. There are several state programs to help defer the tax losses of these purchases (for more information, please see Section 4). In some cases, very small, short-term tax increases are passed on to the residents.

Private Land Trust: The Town often works with Bear Paw Regional Greenways or other local land trusts to acquire easements on conservation lands. Easements may be donated or purchased with funds from towns and other grants. The easement holder maintains stewardship over the land through annual inspections and other activities, and the land owner continues to pay taxes.

Conservation subdivision: Implemented through regulatory measures, this method costs the least to implement in that the developer purchases the land, retains at least 50% as open space, and sells the remaining land as house lots. In most cases, the open space land is owned by a Homeowner's Association, consisting of all residents of the subdivision. The members are required to pay dues, which go towards taxes on the land, monitoring, and maintenance costs.

Doesn't more development lead to more taxpayers and therefore lower taxes?

The additional services required by new residential taxpayers outweigh the additional tax income. Expanding residential development costs towns more than the tax revenue it acquires. A UNH Cooperative Extension study found that Deerfield spent \$1.15 for every dollar generated through residential property taxes. Contrastingly, open space land cost the town only \$0.35 for every dollar of tax revenue.

What are the tax benefits associated with land protection?

Landowners who donate development rights or offer a bargain sale of their land to a municipality or land trust can enjoy an array of tax benefits that can, in some cases, equal or exceed the financial benefits of selling the land. Additionally, the sale of conservation easements can significantly lessen the financial burden for heirs (see Appendix F). For town a resident, open space land does not increase (and in many cases may decrease) residents' taxes based on infrastructure savings and improved property values.¹

Development Practices: In many areas of southern New Hampshire, land prices have increased considerably in recent years, making land protection increasingly expensive. Therefore, changing land use practices has become another very cost effective way to maintain open space, as the answers below indicate.

Isn't the three-acre minimum lot size currently required in Deerfield an important measure for maintaining rural character and open space?

Hypothetically, a 3,000-acre town with a three-acre lot minimum could have 1,000 homes distributed evenly throughout the town, forcing the town to build roads, and provide police, fire, rescue, and school bus services to all reaches of the community. In some municipalities, the cost of providing services to a large-lot residence located at the fringe of the community can be \$10,000 more than one located in a more urban core.² Furthermore, the town has no open space greater than 2.5 acre lots, wiping out the health, recreational, social, and economic benefits that accompany larger tracts of open space. In the alternate hypothetical situation, the same town has 1,000 homes located on 1,000 or fewer acres, clustered into conservation subdivisions, each containing large tracts of open space land. The town provides concentrated services to these areas, which results in considerable savings, and 2/3 or more of the town remains as open space lands.

Do conservation or open space subdivisions cost more for the town?

Development and town design oriented around open space is actually a cost-saving mechanism on two levels. First, these developments are planned according to specific regulations regarding lot location, land preservation, and construction of infrastructure. As these developments avoid sprawl and as no infrastructure is required on the open space land, it costs less to implement water, sewer, and roads. Second, houses located near open space or in conservation subdivisions have higher property values and are more desirable than similar houses not located near open space.³ This means that the tax revenue that the town gains from conservation subdivisions will exceed that of a subdivision of equal population without conservation land, resulting in a higher tax base for Deerfield.

¹ Trust for Public Land, *Managing Growth: The Impact of Conservation and Development on Property Taxes in New Hampshire*, 2005, http://www.tpl.org/content_documents/nh_managing_growth_report.pdf.

² International City/County Management Association, *Why Smart Growth: A Primer*. (Washington, D.C.: Author, 1998).

³ David J. O'Neill, *The Smart Growth Tool Kit* and PFK Consulting, *Analysis of Economic Impacts of the Northern Central Rail Trail* (Annapolis, Maryland: report prepared for Maryland Greenways Commission, Maryland Department of Natural Resources, 1994).

Why would the rural town of Deerfield be concerned about losing open space?

New Hampshire is the fastest growing state in New England, with annual population increases of 13,000 expected to continue throughout the next two decades. With the expansion of I-93, more of this growth will be directed to the towns surrounding the I-93 corridor, including Deerfield. The New Hampshire Office of Energy and Planning predicts a 30% population increase for Deerfield from 2000 to 2010, meaning that Deerfield will see many new residential developments taking over its current wealth of undeveloped land.

Section 2

BACKGROUND AND INTRODUCTION

The Town of Deerfield has a history of appreciation for the protection of open space within its community. Deerfield has been working on local protection initiatives since 1987. Formed in 2002 and reorganized in 2009, the Deerfield Open Space Committee (DOSC) has collaborated with the Planning Board, the Select Board, the Conservation Commission, the Forestry Commission, the Heritage Commission and Bear Paw Regional Greenways and other land protection interests to work towards open space protection - representing varied interests with a common goal.

Although Deerfield was a very successful participant in the Land Conservation Investment Program (LCIP) in the early 1990's, the successor Land and Community Heritage Investment Program (LCHIP) has not been adequately funded. In 2005, however, New Hampshire Department of Transportation began an innovative, multi-year, \$3.5 million Community Technical Assistance Program (CTAP) for the 26 towns in the I-93 corridor most directly impacted by the proposed highway widening from four lanes to eight. Deerfield has benefitted from assistance through CTAP and its related initiatives, including the regional Conservation Framework which provides a vision to guide significant land protection opportunities and local land development practices and the recently developed natural services network, which identifies lands that provide water supply, flood storage, productive agricultural soils, and important wildlife habitat. This Open Space Plan is being updated in 2009-2010 through CTAP.

The overarching goal of this document is to inform the residents of Deerfield of the importance of Open Space preservation, not only for the ecological health of the community but also for the economic sustainability and quality of life improvements that it will bring to the entire town. In addition to identifying the benefits of open space preservation, the plan also outlines the priorities for land preservation so that potential parcels for acquisition can be evaluated to provide maximum and multiple benefits for any expenditure of local, state, or federal funds. The plan also identifies potential changes to land use practices for zoning and subdivision that will help maintain rural character as Deerfield continues to grow. Protection of rural character is a major goal of Deerfield residents, consistently identified in the Town's master planning.

With this plan as a guide, both the Conservation Commission and other Town Boards can continue to work on identifying and protecting the most important open space, while helping to change practices for new development within the Town.

Defining Rural Character

Residents of the Town of Deerfield see open space as a significant component of rural character. The question of what is rural versus urban is one that challenges towns across the nation. At least two approaches to defining that rural character, are: quantitative and qualitative, and are briefly summarized below.

Quantitative: The Center for Rural Pennsylvania formerly defined rural based on the U.S. Census definition. However, the 2000 Census offered an altered and more complex definition of urban and rural. Therefore, in 2000 the Center created a new rural definition, based upon the state population density and

the U.S. Census definition of urban. Using a modification of this definition for the state of New Hampshire, the quantitative definition of rural could be described as follows:

A municipality is considered rural when the population density within the municipality is less than 145 persons per square mile (US Census 2004) or the municipality's total population is less than 2,500, unless more than 50 percent of the population lives in an urbanized area, as defined by the U.S. Census Bureau. All other municipalities are considered urban.

Deerfield has a population density of 85.9 persons per square mile, according to the most recent population figures available (NH OEP 2008), placing it well below Pennsylvania's chosen population density of 145 persons per square mile. Deerfield also did not contain any urbanized areas in the 2000 Census, with urbanized areas defined as containing census blocks or block groups with at least 1,000 people per square mile and contiguous with other blocks or block groups of at least 500 people per square mile. Therefore, Deerfield meets Pennsylvania's quantitative definition of rural.

In 2003, a collaborative study by The Jordan Institute and Audubon Society of New Hampshire analyzed all 259 municipalities and unincorporated places in New Hampshire, categorizing them by number of housing units and whether there was municipal water service. Deerfield was among the 41% (or 106) of communities defined as "rural."

In 2005, the Society for the Protection of New Hampshire Forests updated their 1999 *New Hampshire's Changing Landscape* report. In that report, they chose the following densities to define community character:

Rural = less than 36 persons/sq mile
Exurban = 36-144 persons/sq mile
Suburban = 145-1,000 persons/sq mile
Urban = more than 1,000 persons/sq mile

By that definition, Deerfield, with 85.9 persons per square mile, is in the middle of the "exurban" range, and projected to remain there through 2025

Qualitative: A qualitative rural definition often embodies what residents see and feel, fitting less with a rigid, qualified statement. Some members of the Deerfield Open Space Committee associate rural character with the definition provided by the Center for Rural America: "Relationship to nature is a key determinant of what is rural. When development destroys or seriously degrades the natural environment, it destroys the core basis for ruralness."⁴ Rockingham Planning Commission land use planner, Jill Robinson, defines rural as involving working landscapes including forestry and agriculture where ways of life and livelihood are connected to stewardship of the land. Rural areas include a mix of different settlement densities interspersed with unmanaged areas and economic uses such as tree farms, managed forests, and active agriculture. Agricultural endeavors are encouraged and businesses meet the needs of the community. As opposed to suburbs, rural towns include mixed land uses, mixed incomes, and mixed ages. The DOSC also discussed what rural is *not*; rural communities do not have traffic congestion, traffic lights, or wide, straight, paved roads abutting posted land. Above all, the natural landscape and

⁴ Karl N. Stauber, PhD. *Economic Review*, 2nd Quarter, 2001, p 36-37

areas of open space predominate over the built environment and the town maintains a sense of community facilitated through many places, events, and opportunities for citizens to meet and interact.

Determining Future Character

As evidenced by these comments, open space is an important component of rural character. Residents move to Deerfield because its layout contrasts that of more densely developed cities and suburbs. Large tracts of open space and open spaces between developed places are important characteristics of rural communities that set them apart from other types of communities. By both quantitative and qualitative definitions, Deerfield today is rural. But, what will the future character be as Deerfield grows? It could remain rural, or change character to become a village, small town, or suburb. According to the master plan, maintaining open spaces and a variety of land uses is a priority for the Town of Deerfield as it grows.

Functions of Open Space

In addition to its contribution to the rural character in Deerfield, open space benefits the quality of life of town residents through its social, environmental, and economic effects. The body of this plan will illustrate the necessity of open space to maintain a vibrant, functioning town.

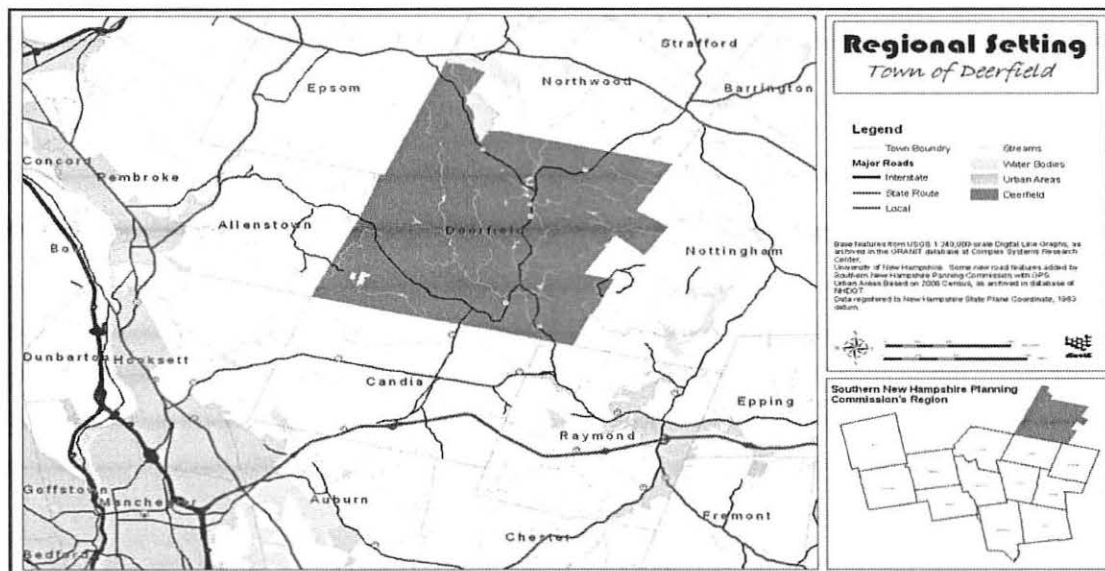
While open space is commonly misconceived as a burdensome expense to the community, residents in towns with open space preservation often pay fewer taxes than towns with greater development. Open space lands cost towns very little in services as compared to residential developments. In the long term, open space is a financial positive for a town, and there are many strategies to address short-term costs such that there is little or no impact to taxpayers.

Deerfield's Regional Setting

Located in the northwest portion of Rockingham County, Deerfield is bounded by the Towns of Hooksett, Allenstown, and Epsom in Merrimack County; and by Nottingham, Northwood, Candia, and Raymond in Rockingham County (see following *Regional Setting Map*). Deerfield consists of 52.1 square miles, and is linked to other parts of the region by NH Routes 43 and 107. Much of the development in town is located along the major and minor roadways, which cross through the community.

Deerfield is bordered on the west by Bear Brook and east by Pawtuckaway State Parks, and to the north by Saddleback Mountain, where large amounts of land are owned by UNH and NH Fish and Game Department, abutting Northwood Meadows State Park. These three areas are the largest remaining tracts of undeveloped land in southeastern New Hampshire.

Deerfield is a member of the Southern New Hampshire Planning Commission that is composed of 13 communities, containing approximately 500 square miles in portions of Hillsborough, Merrimack and Rockingham Counties. Figure 1 below shows the location of Deerfield in relation to its neighboring towns.

Figure 1

A Brief History of Deerfield

The Town of Deerfield received independent town status from the town of Nottingham in 1766. Deerfield was settled in the late 1730s, and as it lay along the main route between Concord and Portsmouth, it became an active center of trade and commerce. The residents erected the Meeting House on Chase Hill soon after the town's incorporation, and this area became known as the Old Center. The Deerfield Parade, along the Concord/Portsmouth route, contained an inn for travelers, a store, and an academy to educate the children of the town's prominent citizens. Leavitt's Hill and South Road also became areas of trade and hospitality.

Education has been a priority of Deerfield citizens from its earliest days. The establishment of a grammar school was one of the top priorities of early citizens, along with the Meeting House and a church. From the first one-room school house, the Town's education system contained 15 school districts and 13 school buildings by the mid-19th century.

The earliest citizens cleared the forests, settled the land, and built houses and important municipal buildings. The population in 1773 was 911. The hundred years witnessed an explosion of hospitality and trade, with taverns, water-powered manufacturing, and craftsmen of all varieties occupying the Town. Farming remained the most important occupation, with land being passed down along family lines for centuries. The population in 1820 had reached 2,133.

After 1850, Deerfield experienced a period of population decline due to the unprofitability of farming and the advent of railroads to the area, which eliminated travelers and freighters. During this period, some old farms became summer vacation destinations for tourists. This led to some development as a modest summer community, yet by 1930 only 635 year-round residents of Deerfield remained. This trend reversed gradually after World War II as workers commuting to outside cities bought homes in Deerfield, which led to the construction of a central school, the George B. White School. The 1970s and 1980s saw extreme population growth, with the population growing from 1,178 in 1970 to 3,300 in 1990. More forest land was cleared to build housing. Deerfield recognizes the need for growth but hopes to maintain the Town's heritage as the town grows.

As provided in the Deerfield Official Website (www.ci.deerfield-nh.us/townhistory.htm).

History of Deerfield land protection and DOSC

Deerfield community members have worked collectively towards local land protection for several decades. The Conservation Commission has worked closely with the Planning Board, the Select Board, and the Historical Society on local protection initiatives since 1987. In 1992, through funding support from six landowners, the Town, and the statewide Land Conservation Investment Program (LCIP), 700 acres along the Great Brook Corridor were permanently protected. Through that experience, local volunteers formulated a process for Deerfield through which to communicate with landowners and citizens to support such initiatives.

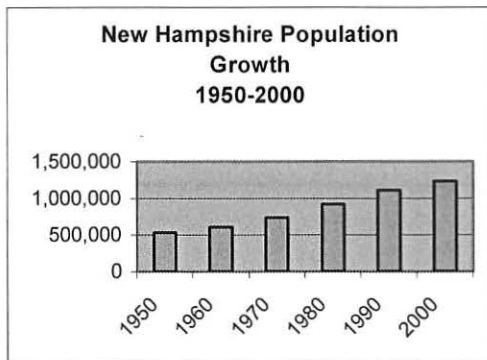
In 2001, the Deerfield Conservation Commission (DCC) proposed the creation of a Joint Open Space Committee to identify how to most effectively expend revenues from the Use Change Tax for land protection. Since then, the Deerfield Open Space Committee (DOSC), in cooperation with the DCC, has worked on educating the public on land preservation, developing conservation priorities, identifying projects, and finding funding for open space protection. The committee has been working towards the completion of the Open Space plan to publicize their work and outline implementation strategies.

Recent availability of the statewide NH Fish and Game Department's Wildlife Action Plan has greatly aided open space planning. Bear Paw Regional Greenway also recently completed their seven town regional conservation strategy that includes Deerfield.

Section 3

THE COST OF SPRAWL--POPULATION GROWTH, SPRAWL, AND SMART GROWTH CHOICES: HOW THEY AFFECT OPEN SPACE PROTECTION

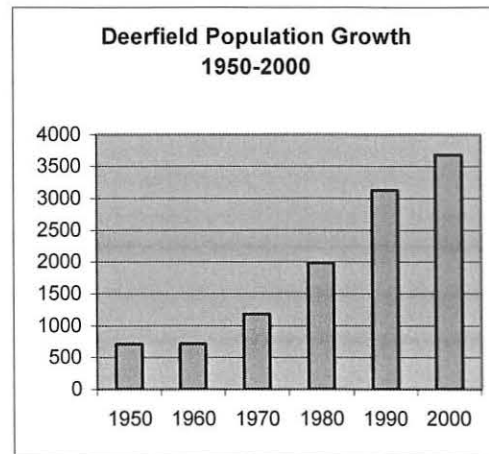
Population Growth in New Hampshire and Deerfield



Since 1950, the population of New Hampshire has grown from 533,110 persons to 1,228,794 in 2000, an increase of *over 100%*. Deerfield's population growth during this same period has increased from 706 persons in 1950 to 3,678 in 2000, an increase of *over 400%* during this same period.⁵ The NH Office of Energy and Planning has projected additional population increases for Deerfield of approximately 30% from 2000 to 2010, and 18% from 2010 to 2020. The New Hampshire Department of Transportation estimates that as many as 500 *additional* people may relocate to Deerfield as a result of the I-93 expansion.

The housing stock in Deerfield is approximately 78% owner-occupied and 9% rental housing. This is difficult for open space planning, as site-built single-family homes on large lots occupy considerably more open space than clustered developments.

So what does all this mean? Planning for future growth is not an easy task, since open space conservation must be balanced with inevitable population increases. Changes in allowable population densities, and zoning and subdivision regulations may be needed in order to plan for growth that will be here in the future.



The Costs of Sprawl

In a document produced by the Southern New Hampshire Planning Commission titled *Sprawl and Smart Growth Choices for Southern New Hampshire Communities*, it is estimated that the consumption of residential land within the 13 communities in the SNHPC region exceeded what was needed for population growth. From 1986 to 2000, residential acreage was consumed at *twice* the population growth rate, and commercial acreage was consumed at *three times* the population growth rate. In 1982, New Hampshire had 0.41 developed acres per person, and by 1997, that figure had increased to 0.55 developed acres per person. These figures are higher than those for New England as well as those for the United States as a whole.⁶

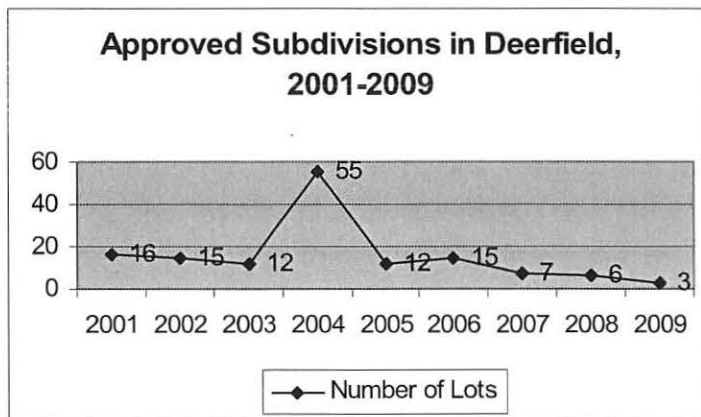
⁵ US Census, 1950-2000.

⁶ State of New Hampshire, Environment 2000.

During the past 20 years, many communities in New England required larger lots in their zoning ordinances for single family homes than were really necessary. They felt that, if larger lots were required, fewer homes would be built, and that would decrease sprawl and its accompanying traffic problems. However, large lot zoning resulted in the subdivision of tracts of land that would never again be useful for open space or other common public areas. Deerfield's zoning ordinance currently requires three-acre lots.

"Overall, the state is converting 13,000 acres of open space per year to roads, houses, businesses, and commercial development."⁷

Deerfield has seen a considerable decrease in the amount of lots approved for subdivision since 2004. Subdivision of lots significantly reduces open space and often removes the potential even for current use of land. The graph below illustrates the spike in approved subdivisions during 2004, with an approved subdivision containing one or more lots. The decline in approved subdivisions since 2004 can be attributed to the recession that started in late 2007. Deerfield saw only 3 approved subdivisions in 2009. With the population increase projected by NHOEP and also the growth expected from the widening of I-93, Deerfield can most likely expect this number to rise again in the coming years. Details on conservation subdivision ordinances can be found in Section 8. Please see the above document at the SNHPC website www.snhpc.org for more information on this topic.



Multiple studies have found sprawling development to be more expensive for municipal, county, and state governments. Twenty-five years of studies cite millions of dollars saved through smart growth management as opposed to sprawl. A summary of some of these studies can be read on the following page as released by the Michigan Land Institute in January 2005. These studies confirm Deerfield's fiscal experience, where tax rates have grown steadily as the population has increased, primarily through large-lot,

frontage-based subdivision. Now that few buildable lots on town road frontage remain, subdivisions more frequently require new road construction, which further increases road maintenance expenses to the town.

Sprawl has been and will continue to be a problem for most communities. Many towns have developed both regulatory and non-regulatory answers to encourage more compact, less sprawling development. Potential regulatory measures for Deerfield will be addressed in Section 8.

⁷ *Conserving Your Land*, Center for Land Conservation Assistance 2004, 1.

Economic Consequences of Sprawl

Government and academic studies consistently find that sprawl is much more expensive than compact patterns of development

1974 – *The Costs of Sprawl*, a three-volume report by the Real Estate Corporation for the White House Council on Environmental Quality, concluded that compact development patterns were much less expensive and environmentally damaging than sprawling residential and commercial development. It is one of the most significant critiques of sprawl ever published.

1997 – *Fiscal Impacts of Alternative Land Development Patterns in Michigan: The Costs of Current Development Versus Compact Growth*, by Rutgers and Michigan State Universities, found that, in the 18 communities studied, land consumption and costs for infrastructure and municipal services were far less expensive when Smart Growth principles replaced sprawling patterns of development.

1997 – *The Cost of Sprawl*, published by the Maine State Planning Office, found that residents of fast growing "new suburbs" were paying many "hidden costs," including higher taxes, homeowners insurance, and school construction costs. Although its student population declined by 27,000 from 1975 to 1995, the state spent \$727 million to construct and maintain new suburban schools. Although Maine's population declined 10 percent in the 1980s, its residents drove 57 percent more miles, highway costs increased by a third, local governments added 100 miles of new roads annually, and police employment increased by 10 percent, even with a 20 percent fall in the crime rate. (<http://www.maine.gov/spo/landuse/docs/CostofSprawl.pdf>)

1998 – *The Costs of Sprawl – Revisited*, prepared for the National Research Council, analyzed nearly 500 studies of the fiscal, economic, and environmental effects of sprawl and concluded that while "most of the American public is not unhappy with the current patterns of development in metropolitan areas – it simply can no longer afford it." (<http://www.nas.edu/trb/index.htm>)

2000 – *The Costs of Sprawl – 2000* concludes that even modest new Smart Growth policies would save 4.4 million acres of farmland, \$12.6 billion in sewer and water expenses, \$109 billion in road construction costs, and \$420 billion in private sector development costs. (<http://www.national-academies.org/trb/bookstore>, or to download full report http://guliver.trb.org/publications/terp/terp_rpt_74-a.pdf)

2000 – *The Costs of Sprawl in Pennsylvania*, published by 10,000 Friends of Pennsylvania, reported that costs for infrastructure and housing are significantly higher in sprawling regions than in planned-growth areas. Compact development can save up to 25 percent of road and utility

construction and up to 20 percent of water and sewer costs. Applied to local road construction, "the savings would be \$52 million per year." (http://www.10000friends.org/Web_Pages/News/Costs_of_Sprawl_in_Pennsylvania.pdf)

2000 – *The Costs and Benefits of Alternative Growth Patterns: The Impact Assessment of the New Jersey State Plan*, published by Rutgers University, found a state plan that encourages settling in existing communities could save local governments \$161 million by 2020, conserve 100,000 acres of farmland, save \$870 million in road construction costs, and eliminate \$1.4 billion in water and sewer development.

2002 – *Growth in the Heartland: Challenges and Opportunities for Missouri*, a Brookings Institution report, found that Pettis County, located near Kansas City, will gain 3.6 percent in tax revenue thanks to population increases and development. But its costs will rise 6 percent, generating a \$2.4 million deficit unless the county raises taxes. (<http://www.brookings.edu/es/urban/missouri/abstract.htm>)

2003 – *The Fiscal Cost of Sprawl: How Sprawl Contributes to Local Governments' Budget Woes*, by Environment Colorado Research and Policy Center, concludes that "sprawling development does not generate enough tax revenue to cover the costs it incurs...If growth patterns do not change in the Denver area...sprawl will cost local governments \$4.3 billion more in infrastructure costs than Smart Growth." (http://www.environmentcolorado.org/reports/fiscalcostofsprawl112_03.pdf)

2003 – *The Jobs Are Back In Town: Urban Smart Growth and Construction Employment*, by the Washington-based research group Good Jobs First, found that metro areas with concentrated growth had 30 percent more construction activity than areas that encouraged sprawl, and concluded that Smart Growth generates more residential, commercial, and transportation construction jobs than sprawl does. (<http://www.goodjobsfirst.org/pdf/backintown.pdf>)

2004 – *Investing in a Better Future: A Review of the Fiscal and Competitive Advantages of Smarter Growth Development Patterns*, by the Brookings Institution, found that in Kentucky's Shelby County, which managed its growth, the cost of additional police, fire, highways, schools, and solid-waste services for every 1,000 new residents added \$88.27 to an average family's expenses. But in Pendleton County, which allows sprawling development patterns, those same services added \$1,222 per family — 13 times as much. (http://brookings.edu/metro/publications/200403_smartgrowth.htm)

Smart Growth Solutions and Principles

During the past 10 years, a number of books and articles have been written on the topic of “Smart Growth.” Many communities throughout New Hampshire have begun to embrace this concept, with promising results, although in reality it is a return to the distinctive practices of colonial New England. These practices reflect on a time when land uses were mixed, homes were often clustered into villages, and good land was fenced for pasture and agriculture. Woodlands were accessed by a network of woods roads, and rough land was left open and unmanaged.

“Smart Growth” won’t necessarily reduce municipal costs greatly because the majority of our expenditures are for education, not other services. However, the publication, *Managing Growth in NH*, notes that, on average, taxes on the median value home in New Hampshire communities are:

- Higher in more developed towns,
- Higher in towns with more year-round residents, and
- Higher in towns with more buildings (more value of buildings).

Since Deerfield will continue to grow, the community can choose its future character and manage this growth by directing it to areas that can sustain more dense development, or continue sprawl based practices (see page 6 on future character). Since large open space areas provide many other ecological and economic services, a better place to direct growth may be into the village areas and other existing developed areas, or into more condensed new development.

Getting to Smart Growth: 100 Policies for Implementation presents a series of ten smart growth principles along with ten policies for each principle. While some of these principles and policies may not yet work for Deerfield, several can work and have been tried in other communities in the region with great success. The following are a few that could work in Deerfield:

Principle 1: Mix land uses. The Town of Deerfield has only an Agricultural-Residential Zoning District, which allows municipal buildings and some commercial and industrial businesses by special exception. While this causes all non-residential buildings to be close to housing, development could more effectively embody mixed-use principles with specific mixed-use zoning. Places that are accessible by bike and foot can create vibrant and diverse communities. Separate uses tend to exact social costs by fundamentally changing the character of communities and undermining the viability of opportunities for people who walk to shops or work, and to meet and chat with their neighbors on the way. Smart Growth supports the integration of mixed land uses into communities as a critical component of achieving better places to live.

Principle 3: Create a range of housing opportunities and choices. While Deerfield has some multi-family and manufactured housing, these options have fallen in popularity due to the proliferation of single-family homes. Deerfield can better accommodate the housing needs of residents by encouraging small, dense multi-family housing near commercial or municipal centers. By using smart growth approaches to create a wider range of housing choices, communities can begin to use their infrastructure resources more efficiently and help aging residents remain in their homes. Zoning codes can be revised to permit a wider variety of housing types.

Principle 5: Foster distinctive, attractive communities with a strong sense of place. Deerfield has a strong history of preserving its community character. Smart growth seeks to foster the type of physical environment that creates a sense of civic pride, and supports a more cohesive community fabric. For example, planting trees is a simple yet fundamental way of adding to the beauty, distinctiveness, and material value of an area by incorporating the natural environment into the built environment.



Principle 6: Preserve open space, farmland, natural beauty, and critical environmental areas. Deerfield is already doing this through the development of this Open Space Plan and the work of the Conservation Commission. Open space supports smart growth goals by bolstering local economies, preserving critical environmental areas, providing recreational opportunities, and guiding new growth into existing villages. Networks of preserved open space and waterways can shape and direct urban form while preventing haphazard conservation (conservation that is reactive and small-scale). Open space can increase local property values, provide tourism dollars, and reduce the need for local tax increases.

Principle 9: Make development decisions predictable, fair, and cost effective. Most conventional zoning codes offer relatively broad guidelines to define the size and use of buildings. A point-based performance evaluation system helps communities to evaluate projects in terms of the smart growth benefits they provide. Projects that fail to meet a desired point level can be redesigned during negotiations with planning staff to achieve a higher score. Reduction of development fees, support for infrastructure financing, or density bonuses may be used as incentives to encourage smart growth projects. Adding such growth incentives now can ensure compact, controlled development rather than the sprawling development that might come later without such regulations.

The principles describe traditional New England land use. Current land use practices follow early 20th century zoning intent to separate land uses, important when heavy industry was prevalent, loud, and polluting. Today, with increasing population, economic activity, land conversion, traffic volume, and energy prices, such traditional land uses once again make economic and planning sense.

Section 4

THE ECONOMIC BENEFITS OF OPEN SPACE

Common misconceptions hold that open space programs are expensive for municipalities, but dozens of studies over the past few decades have shown that communities who curb sprawl and implement smart growth principles, *including land preservation*, spend considerably less money than towns with sprawl. Towns with widely-distributed residential development and continued construction of new residential areas have giant costs of infrastructure construction, including water, sewer, road, and utilities.

In 2005, the Trust for Public Land (TPL) released a study entitled, *Managing Growth: The Impact of Conservation and Development on Property Taxes in New Hampshire*. Looking at the unique relationship between property taxes and municipal revenue in New Hampshire, the study addressed the concern that land conservation increased property taxes. A description of the system of taxation in New Hampshire leads to a better understanding of the concerns over the expenses of conservations lands.

Who pays for land protection?

Acquiring conservation lands by direct purchase represents a known cost to the buyer, which in the case of a municipality is borne by the taxpayers. Municipalities purchasing conservation lands should clearly communicate the benefits of open space, and residents should understand the costs and benefits of the purchase. However, there are hidden costs of land acquisition in the form of lost tax revenue. Since municipalities often need to compensate for the lost tax revenue, there can be a small, *short-term* tax increase for residents. In New Hampshire, there are measures in place by land conservation bodies to account for this tax base loss and avoid making residents pay the difference.

Open space land in Deerfield is most likely to be obtained through purchase or conservation easement acquired by the Town or through a private conservation group. Land may also be obtained through conservation subdivisions. In each situation, the cost is covered in different manners:

- **Private conservation groups:** Private conservation groups tend to acquire conservation easements, in which the owner continues to pay current use taxes on the land.
- **Conservation subdivision:** Open space land in conservation subdivisions is often owned by the developer, where it gets passed on to a Homeowner's Association. The taxation values are low because the land has lost its development rights, and taxes are paid through homeowner association dues by the residents of the subdivision.
- **Municipal lands:** When a municipality purchases land, they do not pay property taxes to themselves, so the property is removed from the tax roll. However, due to the Statewide Education Property Tax and Adequacy Aid (SWEPT), the total equalized value of the town would decrease with the lands removed from the tax roll. Therefore, "property rich" towns would have to send fewer property taxes to the state for education and "property poor" towns would receive greater adequacy aid from the state. While the SWEPT funds do not account for the total value lost, the resulting tax increase is slight (in the TPL study, the highest scenario of tax increase was a mere \$0.88 on a \$100,000 property).

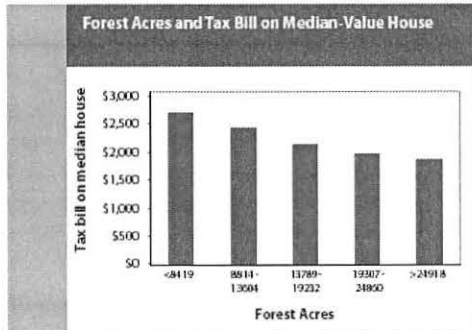
While not as likely in Deerfield, the state and federal governments have measures in place to account for municipal tax revenue lost through state and federal open space land acquisition:

- **Federal lands:** If the federal government purchases land in New Hampshire, they do not pay taxes but rather pay two annual fees. One fee goes directly to the town's school district and the other to the town as a Payment In Lieu of Taxes (PILT). If the fees do not equal the amount of taxes the town would receive on that land under current use, the state will pay the difference. However, these fees often exceed the current use taxation values.
- **State lands:** The state pays the municipality the amount of taxes they would receive under current use value of the land.

Long-term Benefits

The TPL report shows that towns with more permanently protected lands have long-term tax benefits, or the residents pay fewer property taxes than towns with fewer permanently protected lands. The strongest indication of lower taxes comes in the form of commercial developments, which can offset the financial demands coming from residential development. In the long term, however, increased commercial and

Chart 4³²



industrial development have not been demonstrated to reduce taxes greatly, presumably because commercial and industrial development typically create jobs, which attract additional residents. The residential growth that often accompanies commercial and industrial growth can reduce or eliminate the tax advantages that the commercial and industrial land use may appear to have if considered in isolation. All else being equal, the TPL study emphasizes land protection does *not* result in higher taxes and generally results in lower taxes, dispelling the myth that land protection is costly over the long run.

The report notes that the conservation of a single parcel does not have a large affect on the amount of development that will occur in towns. However, the strategic placement of certain conserved parcels can influence the direction and location of development, with the possible effect of confining development to proximate areas, which would ease the construction and servicing of infrastructure to new development.⁸

Several academic studies have also examined the relationship between open space and property values, indicating that properties bordering open space increase in value due to the quality-of-life increases associated with open space. Jacqueline Geoghegan's 2002 study of Howard County, Maryland, determined that land values on land located next to "permanent" open space increase three times more than land located near "developable" open space. These studies suggest that the property value increases derived from the open space additions can be used to fund current and future open space initiatives.⁹ These findings do not reflect an overall tax increase for the town but rather greater perceived land value due to proximity to open space.

⁸ Trust for Public Land, *Managing Growth: The Impact of Conservation and Development on Property Taxes in New Hampshire*, 2005, http://www.tpl.org/content_documents/nh_managing_growth_report.pdf.

⁹ Geoghegan, J., L.A. Wainger, and N.E. Bockstael. 1997. Spatial landscape indices in a hedonic framework: an ecological economics analysis using GIS. *Ecological Economics* 23(3): 251-264.

Geoghegan, Jacqueline. 2002. The value of open spaces in residential land use. *Land Use Policy* 19: 91-98.

Hobden, David W. G.E. Laughton, and K.E. Morgan. 2004. Green space borders—a tangible benefit? Evidence from four neighborhoods in Surrey, British Columbia, 1980–2001. *Land Use Policy* 21(2): 129-138.

Does Open Space Pay?

A study conducted during the mid 1990s by Philip A. Auger, Extension Educator, Forest Resources, University of New Hampshire Cooperative Extension, looked at the cost of community service for residential, commercial, industrial, and open space land uses within the communities of Stratham, Dover, Fremont, and Deerfield. In each community, residential land use revenues *were exceeded* by expenditures by an average of approximately 12%. Conversely, for open space land use, revenues *exceeded* expenditures. The results of this study, published in 1996, still ring true today as evidenced by a similar study for the Town of Brentwood, NH. This small town in southeastern New Hampshire, not far from Deerfield, had a population of 3,197 in 2000. Tax revenue generated from residential property in this town fell short of the cost of school and town services by 17%, while revenue from open space lands exceeded town service costs by 17%.¹⁰

While each town in New Hampshire has a unique blend of land uses, revenues and expenditures, these studies point out some fiscal consistencies that are likely to apply in most circumstances. One of these is that *residential land use very often costs communities more than they generate in revenues*. Traditional residential housing brings with it a tremendous cost load for community services, roads, landfills and schools. Open space lands are often a net asset to New Hampshire communities, and contribute to the stability of community tax rates. If land is taken out of open space and converted to housing, it will often cost far more than it generates in taxes. This has been supported by other well-documented fiscal impact studies in New Hampshire communities, including Milford and Londonderry.

Water—quantity, quality, supply, and flood control

Among the many benefits of land preservation is that undeveloped land contributes to a readily accessible and sufficient supply of clean water and reduced flood events. While water is commonly construed as a health or ecological benefit, it is also a strong economic benefit as adequate water supply is essential for economic activity, and water treatment or purchase can be a costly endeavor for municipalities without access to enough clean water.

Deerfield's water supply is currently clean and healthy, providing an adequate source of water for residential, commercial, and institutional users. Should large tracts of open space be developed, more pollutants can enter the water supply. In the case of a polluted water source, the Town could potentially incur millions of dollars in clean-up costs or residents could face the need to purchase water from other sources. It is estimated that the cost of cleaning up roadway-related water pollution could exceed \$200 billion.¹¹ This figure does not include the pollution of pesticides, fertilizers, and some road salting, all of which contribute to pollution but which can be mitigated through open space preservation and aquatic buffers.



Steven's Field on Griffin Road

¹⁰ Brentwood Open Space Task Force. *Does Open Space Pay in Brentwood? Part 1: Housing Growth and Taxes*. May 2002.

¹¹ Hilary Nixon and Jean-Daniel Saphores, *Impacts of Motor Vehicle Operation on Water Quality: A Preliminary Assessment*, School of Civil & Environmental Engineering, University of California, Irvine (www.uctc.net), 2003.

Through the preservation of open space, Deerfield can protect its water supply, preventing costly clean up and maintenance. In addition, rain and snow can recharge the water table, maintaining river and stream flows, healthy wetlands, and clean lakes and ponds. When rain and snow melt refill the aquifers, rather than running off into surface waters, the potential for flooding is substantially reduced or eliminated when combined with informed development practices.

A Note on Climate Instability

Given recent recognition and acknowledgement of the realities of current and future climate instability, open space increases even more in value because it provides the many essential functions mentioned previously. These functions moderate extremes in climate related events, and include:

- Providing food, fiber, and fuel
- Absorbing carbon dioxide
- Cooling hot days/nights
- Cleaning the air
- Absorbing and slowing flood waters and snow melt

Funding land conservation

Deerfield has already taken a vital step in ensuring that some of its open lands remain permanently in their natural states. The Town has allocated 50% of the land use change tax monies to the conservation committee for the purpose of acquiring conservation lands. However, to maximize the economic, social, and environmental benefits of open space, the Town must find additional means of land preservation.

The DOSC emphasizes the importance of regulatory conservation strategies, including changes to zoning ordinances to emphasize conservation subdivisions. These regulations would have no implementation cost and, in fact, save money on infrastructure and operating costs. Using conservation subdivisions, the open space land is built into new developments rather than purchased afterwards, allowing cost savings for the Town.

For funding-based land acquisition, the Town can work cooperatively with land trusts and private non-profit conservation organizations to pool financial resources and expand conservation efforts. The Bear Paw Regional Greenway Land Trust works specifically with Deerfield and surrounding communities to link Bear Brook State Park, Pawtuckaway State Park, Northwood Meadows State Park, and other conservation areas. As a community-based organization composed of many townspeople, Bear Paw can serve as an important mobilizing and organizing resource. The Rockingham Land Trust, serving all the communities of Rockingham County, can also be a good local resource, although it currently holds no conservation lands in Deerfield.

The Trust for Public Land and the Nature Conservancy are both national land trust organizations active in New Hampshire, which can provide resources and assistance to preservation projects. Additional state resource organizations include the Society for the Protection of New Hampshire Forests and the Audubon Society. For more information on funding and strategies, see Section 8 on Implementation.

Section 5

SOCIAL BENEFITS OF OPEN SPACE

Connecting Resource Lands

Regional greenways, such as those prioritized in the seven town the Bear Paw Regional Greenways Land Trust, provide recreational and open space corridors for residents of the region as well as facilitating wildlife survival. Greenways, particularly among rivers and streams, have social as well as ecological benefits, such as the potential for recreational trails, wildlife viewing, and a wide expanse of connected open space.

The Deerfield Conservation Commission has already protected significant parcels of land encompassing some of the town's most valuable natural resources, including wetlands, waterways, steep slopes, town forests, and historic sites. These areas are home to diverse populations of flora and fauna, including old-growth beech, native rhododendron, great blue herons, and a black gum swamp. Additionally, these areas have been fitted with trails, picnic tables, and other amenities to encourage public enjoyment.

Bear-Paw Regional Greenways is a land trust dedicated to creating greenways to connect Pawtuckaway, Northwood Meadows, and Bear Brook State Parks, as well as other natural areas. Due to the high rate of land development, experts fear that wildlife habitats protected in the parks will suffer as outside land becomes developed. Bear-Paw has helped to protect over 2,000 acres to date and has over 3,000 more in negotiation. Most landowners have voluntarily approached the land trust to work towards preservation.

In the case of lands fragmented by roads, greenways that connect undeveloped tracts of land can create an expanse of scenic landscape along the roadway. These scenic roads can be enjoyed by all Deerfield residents as they drive through the town. Within these tracts, residents can hike, bike, jog, ski, and potentially fish and hunt (with permission of property owners). Greenways would provide a wealth of recreational opportunities to Deerfield citizens literally in their own backyards.

Two key strategies are fundamental to creating a regional open space network:

- Residents need to be better informed about the open space resources that already exist through the Deerfield Conservation Commission, and about the potential for new regional connections through Bear-Paw Regional Greenways;
- A coordinating and management entity is needed to forge continuing connections and enhance information exchange, harmonize local plans, build consensus on priorities, and help to fund specific projects.

If Deerfield is to protect the irreplaceable biological diversity, the Town must reduce fragmentation and restore the health and vitality of its forest communities.

Open Space and Recreation

Lands that offer personal or socially interactive recreation, or active or passive recreation, are essential elements of the open space system. Universal access should be provided at a variety of appropriate places where development of such access will not compromise the character of the area.

The Town of Deerfield recognizes the opportunity to provide responsible recreation for all types - walkers, skiers, snowshoers, people with strollers or wheelchairs, horseback riders, mountain bikers, hunters, fishers, and ATVs. Deerfield has a network of trails ranging from rustic paths to dirt roads existing on town lands and with some access granted on private conservation easements. Further study is needed to evaluate trail use and to suggest a recreational network to serve the spectrum of trail users in this town. Not all open space land is appropriate for trail use and/or public access, but there remains potential to better connect and expand existing trails.

Deerfield can also consider implementing a plan for Livable, Walkable Communities, through New Hampshire Celebrates Wellness. The necessary elements of this plan include economic health, environmental health, human health, and community health. With these elements, residents can access services, improve air and water quality, improve their fitness through recreation, and gather informally with friends and neighbors. The characteristics of Livable, Walkable Communities are symbiotic with the goals of the open space plan.

Class VI roads are a significant resource for Deerfield. These currently provide recreational opportunities for Deerfield citizens and are often functionally used as trails. The town currently has the opportunity to develop policies for open space in the future, of which Class VI roads can be an important contributor to rural quality of life when preserved for recreational use. When considering the transfer of class VI roads to recreational trails, the town must consider the road's use in terms of access to land. RSA 231:43 stipulates that no roadway of any type that provides sole access to any land shall be reclassified as a class B trail without the written consent of the owner of that land.

In order to supplement the trails existing in Deerfield, the Town can look into the Recreational Trails Program (RTP), which is a component of the Transportation Equity Act for the 21st Century (TEA-21). This program funds motorized, non-motorized, and diversified trail projects, and it is funded through federal gas tax money paid on fuel for off-highway recreational vehicles. Projects are given up to 80% of funding, with at least 20% required from the Town or organization in the form of labor, supplies, or cash. Many projects are completed by local scout groups or volunteers. Over \$900,000 in grant funding was approved for trail projects in 2009. As of September 30, 2009 the SAFETEA:LU has expired and a new Federal surface transportation bill has not yet been established. Programs under the SAFETEA:LU are currently operating under a continuing resolution for Federal Fiscal Year 2010. As a result, the state's apportionment of will be received incrementally as notified. Final funding amounts for FY 2010 are unknown at this time.

Another strategy for local recreation is to change land use regulations to require that existing paths and trails be incorporated into subdivision design. One successful example is Deer Run Estates, where new residents benefit from access to a trail within a designated right of way that provides them direct access to state parks.

The town also maintains park facilities and fields for recreational use, many of which also highlight the natural surroundings. Veasey Park offers a sandy beach and lake frontage on Pleasant Lake, and Lindsay Woods houses a physical training challenge course as well as trails around the woodland acreage. Deerfield Community School, G.B. White Building, and Bicentennial Field all offer some combination

of playgrounds, athletic fields, and open lawn space. These parks are run by volunteers appointed by the Board of Selectman

The advancement of recreational opportunities in Deerfield can also expand the social network of the town. Residents can meet neighbors while hiking a trail, hold town festivals in newly-established parks, and work together to construct improvements to public open spaces. The increased social benefits of open space again reinforce the rural character of the town.

Aesthetics

A prime reason that people move to Deerfield is to live among the beautiful scenery of the rural, wooded town. With cleared agricultural lands, rivers and streams, and a rolling terrain, the Town of Deerfield offers many scenic viewscapes that residents associate with the character of the town.

The alternative to preserving land for its aesthetic value is to live in a town characterized by billboards, parking lots, and fences rather than fields, trees, and hills. Aesthetic landscapes lend appeal to the town and provide economic benefits as well. As delineated in Section 4, several studies indicate that land values bordering open space are higher than those in developed neighborhoods, suggesting that people are willing to pay for the aesthetic value derived from open space protection.

Air Quality

The rural town of Deerfield does not currently suffer from excessive air pollution, in large part due to the amount of undeveloped land. The trees in forested areas absorb pollutants such as ozone and sulfur dioxide, leaving the air noticeably cleaner. A single acre of trees takes in about 2.6 tons of carbon dioxide each year, removing the some of the pollutants released by vehicles (American Forestry Association). As development progresses, construction and traffic will increase air pollution and formerly forested land may be cleared for buildings.

Open space preservation is integral in maintaining air quality in Deerfield. The older, larger trees (ones with diameters greater than 30 inches) currently residing in Deerfield's forests, such as the black gum tree, can remove up to 70 times more pollution from the air than trees with diameters less than three inches (Nowak 1994), meaning that trees cleared for development and replaced by new trees would contribute less to air quality. Additionally, trees trap the particulate pollution that causes asthma and respiratory problems (Nelson 1975).

Water Supply

Deerfield residents receive their drinking water from underground aquifers through private wells, both of which are subject to runoff pollution due to salted roads and parking lots, pesticides, antifreeze, and other toxins of developed lands. Forested areas can retain up to 90% more of the rainfall than pavement and roofs, filtering the chemicals from entering the water system (Anderson 2000, Trust for Public Land 2005).

The town of Deerfield does not provide municipal water service nor does it have any immediate plans to provide this service. However, the Town has dam and flowage rights to



Pleasant Lake, which is in the northwest quadrant of Deerfield. These rights were acquired by deed in 1974 from Thomas Hodgson and Son, Inc. The town owns several small tracts of land, including Veasey Park, around Pleasant Lake, and 30 acres on the western part of Freese's pond, which connects with the Lamprey River headwaters. Town residents obtain most of their water supply from underground aquifers in either sand and gravel deposits or bedrock, with wells located throughout the Town.

Water Quality

Vegetated buffers physically protect a stream or river by maintaining trees, shrubs, bushes, tall grasses, and groundcovers that provide shade and remove debris and polluting nutrients. Buffers usually contain three zones: the innermost *streamside zone* of forested shade to enhance stream quality; the *middle zone*, 50-100 feet, often a managed forest with some clearing for trails or open areas, and the *outer zone*, usually around 25 feet, but often expanded to protect adjacent wetlands and any floodplain.

Developed lands include structures with roofs, driveways, and parking lots that shed water and concentrate the runoff into surface waters. Trees, meadows, scrub areas, and agricultural lands allow water to recharge back into underground supplies, maintaining base flow in rivers and streams, lakes and ponds, and wetlands. Without such recharge, droughts are more likely, as well as flooding during severe rainfall or snow melt.

Section 6

ECOLOGICAL BENEFITS OF PROTECTING OPEN SPACE

The Importance of Biodiversity¹²

Biodiversity, which encompasses the existence and interacting processes of plants, animals, fungi, algae, bacteria, and other microorganisms, is integral to human survival. The complex natural world provides elements that support human life, such as enriched soil to grow food, oxygen to breathe, and purified water to drink. The balance of maintaining these processes and protecting the habitats in which they occur is vital to supporting all life on Earth. However, as habitats are lost due to development of land or invasive and non-native species, this balance of biodiversity is threatened.

Biodiversity is important to maintain for economic as well as ecological reasons. Plants are sources of food, medicine, fuel, fibers, timber, and more. Furthermore, plants and animals pollinate fruit and vegetables, control pests, and add nutrients to the soil as part of their natural functioning. Wildlife is an attractive draw for visitors from around the country, who come to the region to bird-watch, to hunt and fish, and to hike amidst the fall foliage. In New Hampshire, 88 percent of the population participates in wildlife-related activities and this brings millions of dollars to local communities.

New Hampshire Fish and Game Department has completed a statewide wildlife action plan (WAP) for both game and important non-game species. Because of the importance of wildlife to rural economies, additional federal funding is expected to support a wide range of activities in local communities so that wildlife populations remain healthy as the state grows.

Rare Species and Natural Communities

New Hampshire's *Natural Heritage Inventory* (NHI)¹³ has assessed the Rare Species and Exemplary Natural Communities of Deerfield based on state and federal status as well as rarity of the species in the community. Table 2 lists those species and communities of very

Table 2: NHI Inventory				Locations in Town in the last 20 years
Species or Community Name	Type of Species	State Status		
Red Oak – ironwood – PA sedge woodland	Community – Terrestrial			3
Rick Appalachian oak rocky woods	Community – Terrestrial			2
Rick Appalachian oak rocky woods system	Community – Terrestrial			2
Semi-rich Appalachian oak – sugar maple forest	Community – Terrestrial			1
Black gum - red maple basin swamp	Community-Palustrine			3
Emergent marsh – shrub swamp system	Community-Palustrine			1
Giant Rhododendron	Plant			1
Small Whorled Pogonia	Plant	Endangered		1
Cerulean Warbler	Bird	Critical		1
Common Loon	Bird	Threatened		1
Osprey	Bird	Threatened		1
Blanding's Turtle	Reptile			3
Northern Black Racer	Reptile			2
Smooth Green Snake	Reptile	Special Concern		1
Wood Turtle	Reptile	Special Concern		1

⁶ From Wildlife Habitats, Fall 1996, University of New Hampshire Cooperative Extension.

¹³ Natural Heritage Inventory, New Hampshire Natural Heritage Bureau. January 2010.

high importance that can still be found in Deerfield today.

These inventories identify sites that contain habitat of rare, endangered and threatened natural species. The NHI was used to identify rare species and natural community areas on the Lands of Special Importance Map (Appendix N, Map 8).

There is the rare black gum tree, living in several “basin swamps” in Deerfield. The black gum tree (*Nyssa sylvatica*) is a hardwood in the tupelo family that may grow up to 75-80 feet tall and may live over 400 years.

Wildlife Crossings

“The New Hampshire Fish and Game Department has worked together with partners in the conservation community to create the state's first Wildlife Action Plan. The plan, which was mandated and funded by the federal government through the State Wildlife Grants program, provides New Hampshire decision-makers with important tools for restoring and maintaining critical habitats and populations of the state's species of conservation and management concern. It is a pro-active effort to define and implement a strategy that will help keep species off of rare species lists, in the process saving taxpayers millions of dollars.”¹⁴

Map 17, Appendix A, illustrates the Wildlife Habitat for the Town of Deerfield and Map 2, Appendix A, illustrates the Wildlife Connectivity for the Town of Deerfield.

The aforementioned regional greenways are also important tools to protecting wildlife habitats. Small blocks of open space expose more borders to development, thereby threatening species habitat inside.

Wildlife crossings are a simple way to help connect wildlife habitat through consideration in zoning and planning. Wildlife crossings are small parcels of land, usually underneath or across roadways that connect fragmented wildlife habitats and allow wildlife to breed, find food, and migrate to find new habitats. The most important environmental features to consider in terms of wildlife habitat are unfragmented tracts of land with natural land cover and undeveloped riparian zones. Wildlife crossings can be as simple as constructed passages through or under roadways that connect two wildlife habitats. The following areas are recommendations for potential wildlife corridors for the Town of Deerfield. These areas have the highest risk for wildlife movement and cause fragmentation of large, important areas of wildlife habitat.



Southwest

- South Road
- Mt. Delight Road between Swamp Road and Thurston Pond

Southeast

- Rte 107 between the town line and the intersection of Rte 43

¹⁴ NH Fish and Game. Wildlife Action Plan. 2006

Northwest

- Griffin Road at Mud Pond or Fogg Shores Forest
- Old Center Road north of Meeting House Hill
- Rte 107 between Old Candia Rd and Perkins Rd

Northeast

- Nottingham Road west of Perry Road
- Rte 43 between Saddleback Mountain Rd. and Harvey Rd.

Wildlife crossings are particularly effective when located along a riparian corridor, which has a rich array of species habitats. Aquatic buffers to developments can provide these crossings along such corridors.

Water Quality and Quantity

Sustained water quality and quantity are vitally important to support all ecological functions. Undeveloped land supports the health of water bodies and wetlands, and the network of rivers and streams provide corridors vital for wildlife movement and food and shelter. As discussed previously, the forested soil of wooded lands can filter significantly more pollutants from pesticide or roadway-related runoff than can lawns or asphalt surfaces. By protecting the water supply, open space lands not only contribute to the health and economic benefits of the town, but they protect valuable water resources and wildlife habitats as well.

Reducing Climate Instability

See page 17.

Section 7

PRIORITIES FOR DEERFIELD

There are a significant number of areas in Deerfield that are desirable locations for open space preservation. The Deerfield Open Space Committee has not specified any individual lots for protection; rather, they have focused on areas desirable as open space based on the land's attributes. These priorities and other significant considerations for assessing open space potential are described in the following section, with areas of high value to the town described at the end.

Criteria for Acquisition and Protection of Open Space

The DOSC considers the following criteria priorities in terms of land protection:

1. Lands within the most current Green Infrastructure Open Space Network.
2. Protect Deerfield's most sensitive natural areas, including prime wetlands, aquifers, vernal pools, streams and lakes, wildlife habitats (including wildlife corridors), old forest stands, and agricultural soils to protect the environment and to balance growth and development with quality of life.
3. Connect un-fragmented areas with guidance based on local knowledge from residents, scientists, and land trusts.
4. Preserve the natural and cultural resources provided by Deerfield's scenic views, Class VI Road system, trails, and culturally and historically significant lands.
5. Continue to work with land trusts and state and federal agencies to develop a natural greenway and trail system consisting of public and private protected lands linking Bear Brook State Park, Pawtuckaway State Park and Northwood Meadows State Park.
6. Work with the NH Coastal Watershed Land Protection Program, through the Nature Conservancy, NH Estuaries Project, and regional planning commissions, to establish priorities for preservation.
7. Work with neighboring towns to connect the green infrastructure and to create linkages for open space on a regional basis

These priorities will be considered for individual parcels as they become available for open space protection, as the Town works to best allocate its limited financial resources. Additionally these priorities will guide the Conservation Commission's larger efforts to match its own conservation strategies with those of state and regional conservation groups.

While the DOSC will prioritize the abovementioned criteria when considering land for open space protection, the following are additional criteria to consider beyond those specified by the commission:

- **Potential linkages to existing open space**, to recreation facilities, and to similar areas in adjacent communities.
- **Environmental sensitivity and importance of the parcel** such as the presence of aquifers, rivers, wetlands, wildlife and scenic qualities. This includes wildlife corridors, unique habitat, and endangered, threatened and rare species.
- **Location in areas that do not have enough public open space** or are threatened by continued development. Will the acquisition of the parcel provide additional recreational opportunities in an

area of the Town that is in need of such facilities? Does the purchase of the parcel encourage Town-wide distribution of open space and recreation?

- **Town-wide versus special group benefit.** Would the acquisition of this parcel benefit the Town as a whole or a select group of residents in need of additional opportunities? The importance of addressing each need will depend on the specific goals of the Town.
- **Outdoor recreation potential.** This is related to providing additional athletic fields as well as providing areas for greenways and trails that provide opportunities for hiking, walking, running, skiing, and biking.
- **Cost and availability of the parcel.** This should account for the amount residents are willing to pay to purchase open space (in the form of increased taxes) and the availability of funding sources that would be available if a particular property were targeted for acquisition.
- **The financial impact** that removing the parcel from development will have on the Town. For example, a residential parcel may cost the Town in services while a commercial property may be a positive contribution to the tax base (see previous summary detailing cost of residential service versus open space costs and benefits).
- **Aesthetic benefits to the general public** and the preservation of the Town character.

2004 Co-Occurrence Analysis

A natural resources Co-Occurrence Analysis is an important tool in identifying and prioritizing areas for protection. The Analysis identifies high-value natural resource areas and maps them, with multiple levels of unique resource data overlaid spatially using geographical information system software (GIS) to display on one comprehensive map. The Analysis applies numerical values to selected resource factors, with higher values and darker colors indicating land that should be prioritized for protection.

The Deerfield Open Space Committee, with assistance from the Southern New Hampshire Planning Commission conducted a co-occurrence analysis in 2004 and the following are the twelve resource factors considered in the 2004 Deerfield Co-Occurrence Analysis:

- Stratified drift aquifer
- Potentially favorable gravel well area
- Sanitary radii
- Drinking water protection areas
- National Wetlands Inventory (NWI) identified wetlands
- Open/Agricultural/Disturbed land cover
- High elevation (>800 ft.)
- Steep south facing slopes
- Unfragmented natural land cover
- Undeveloped riparian zone
- Prime agricultural soil and soils of statewide significance
- Hydric soil (poor or very poor drainage)

Appendix N shows maps of Deerfield, developed during the 2004 co-occurrence analysis, featuring unfragmented lands, wildlife features, lands of special importance, and wetlands, all of which are features of the co-occurrence analysis. The following areas, roughly categorized by region, are some of the areas with the highest Co-Occurrence scores from that analysis

Southeast

- Lamprey River corridor east of Cottonwood Estates Easement
- Lamprey River corridor along Rte. 107
- Riparian corridor along the brook north of Reservation Road

Southwest

- North Branch River corridor south of South Road
- Area north of Bear Brook State Park by Rockingham/Merrimack County border

Central

- Area along Ridge Road in Drinking Water Protection Area
- Area immediately west of Old Center Road North

Northeast

- Land west of Curry protected area
- Back Creek riparian corridor
- Undeveloped shore lands of Freese's Pond (lower portion)
- Lamprey River riparian corridor

Northwest

- Mud Pond and surrounding riparian corridor
- Riparian corridor north of Pleasant Lake
- Riparian corridor west of Griffin Road

2009 Co-occurrence Analysis

Through the I-93 Community Technical Assistance Program (CTAP) under the New Hampshire Department of Transportation, the Town of Deerfield has had the opportunity to update the 2004 analysis with new information that has come out since that was done and to develop the town's green infrastructure from this new analysis.

Green infrastructure is defined as "*an interconnected network of green space that conserves natural ecosystem values and functions and provides associated benefits to human populations.*"¹⁵

- The purpose of the green infrastructure is to connect open space areas that meet the priorities identified in this plan and subsequent updates
- The green infrastructure provides desirable open space that Deerfield needs to maintain its rural character as identified in the master plan.
- It helps town residents to focus on land with higher conservation values.

¹⁵ Benedict, Mark A. and Edward T. McMahon. The Conservation Fund. *Green Infrastructure: Smart Conservation for the 21st Century*. Sprawl Watch Clearinghouse Monograph Series. 2002.

- The green infrastructure provides the opportunity for the Town to connect its own open space corridors to surrounding towns and make better decisions when considering new open space parcels to protect.
- The green infrastructure should be a continuous network with no “islands” of infrastructure land throughout the town.
- The infrastructure should inform the design of new developments and act as a guide for where in a new development open space areas should be.

Guidelines for defining the green infrastructure:

- Include areas of exceptionally high resource value for a particular category.
- Include areas where multiple resource values occur in the same place.
- Give added consideration to lands near existing conservation lands.
- Give added considerations to lands that allow each resident reasonable access to open space.
- Avoid areas slated for industrial use or commercial development, unless they contain exceptionally high quality resources.
- Include at least 25% of the town’s land area to ensure the sustainability of natural processes.
- Do not include over 50% of the town’s land area, to allow for future development.
- Try to combine high value polygons into a single polygon, by including “linking lands” that are feasible to protect.
- Include the connectivity corridors identified by NH Fish and Game, et al.

The following are the resource factors taken from the Bear Paw data considered in the 2009 Deerfield Co-Occurrence Analysis:

- Stratified drift aquifer
- Potentially favorable gravel well area
- Sanitary radii
- Drinking water protection areas
- National Wetlands Inventory (NWI) identified wetlands
- Open/Agricultural/Disturbed land cover
- High elevation (>800 ft.)
- Steep south facing slopes
- Unfragmented natural land cover
- Undeveloped riparian zone
- Prime agricultural soil and soils of statewide significance
- Hydric soil (poor or very poor drainage)

The following data sources also were used:

- 2006 Wildlife Action Plan – Tier 1 & Tier 2 Habitats

- 2006 Wildlife Action Plan – Peatland, Grassland (25+ acres), Forest Floodplain, Cliff, Rocky Ridge or Talus Slope
- Quality of Life Areas – Scenic Views, 21 Cornerstones, Scenic Roads listed on page 94 of Town Report.

The analysis was a straight co-occurrence, where each factor was weighted the same (1 point) and final co-occurrence values were derived from overlaying each layer on top of one another to determine where the highest values occur in Deerfield.

The areas listed above with the highest Co-Occurrence scores from the 2004 analysis are still the areas with the highest co-occurrence scores in 2009. See Map 9, Appendix N, for the 2004 analysis and Map 1, Appendix A for the 2009 Analysis. A comparison of the maps and data layers from 2004 to 2009 shows that very little has changed on the individual data layers and also on the co-occurrences that were developed. Along with the co-occurrence, the addition of the 2006 Wildlife Action Plan data, Wildlife Connectivity Model and the Quality of Life Areas (Appendix A, Map 19) helped the Open Space Committee to determine how best to develop the green infrastructure and the linkages that exist from the different open space habitats.

The NH Wildlife Connectivity Model is a basic, GIS-based, landscape permeability model that predicts broad-scale wildlife connectivity zones across the state. This analysis can identify both key areas for land protection efforts and strategic locations for restoring connectivity in currently fragmented landscapes. Preliminary validation of the NH wildlife connectivity model utilized available data from tracking and telemetry studies. Visual assessment of these data provided a sufficient level of confidence in the model to accept the resulting cost surface for general conservation planning purposes. Further, the traffic volume data for local roads was estimated from population vs. road class parameters. It is strongly encouraged that users incorporate best available local data sources wherever possible and ground-truth the results of corridor analyses, which is essential for identifying critical connectivity zones.¹⁶

As described above, the 2009-2010 Deerfield Open Space Committee developed the town's green infrastructure, using the resource factors and co-occurrence analysis as a guide to determine the areas with the highest natural resources values in town. Map 3, Appendix A shows the network of green infrastructure identified by the Committee. The Deerfield green infrastructure is 12,661.4 acres and 38% of the town. Map 4, Appendix A shows the parcels in Deerfield which intersect with the green infrastructure.

An update to the Wildlife Action Plan and related data became available on March 22, 2010, after the analysis for this report had been completed. The Deerfield Open Space Committee addressed this update at their May 31, 2010 meeting comparing the new data to the old and to the analysis that had been done for the plan. Minor changes were made to the previously defined green infrastructure after reviewing the new data and the other base layers already used in the analysis to incorporate certain areas of importance the committee felt had not been captured previously.

The green infrastructure does not capture every area in town that has 1 or more natural resources of high value to the town; it is meant to capture those areas with the most high value natural resources and to create a network and linkages between them. Deerfield should plan to work with neighboring towns to

¹⁶ NH Fish and Game. Wildlife Connectivity Model Background Data.

continue the green infrastructure's network and linkages throughout the region, as conservation of high value natural resources needs to be approached from a regional perspective, since natural resources span town boundaries and are not confined within just one town.

Important Agricultural soils (Map 5, Appendix A) are located in several areas of Deerfield that are not covered by the green infrastructure. This does not mean that these areas are any less important than those contained within the green infrastructure and they should still be areas that the town aims to protect and conserve. The green infrastructure is meant as a guide for the town when they are developing and implementing conservation strategies, so that their efforts can be focused in the areas that are the most crucial, in terms of the area and quantity of high value natural resources and so that a network can be developed, which is highly important to the function of many natural resources. Other areas of town that have high value natural resources that are not captured in the green infrastructure should also be considered in the development of protection and conservation strategies.

It should be noted here that certain lands may become available that do not meet some of the specifications delineated above. When this occurs, the Town may wish to consider the potential purchase of these properties, or the purchase of a conservation easement, if these actions will enhance the Town's open space acquisition program. Success of the program is determinate upon flexibility and creativity.

Strategies for the protection of important agricultural soils and agricultural lands include:

Existing Protections in New Hampshire for Agricultural lands

In the New Hampshire State Development Plan, one of the goals is to,

"Protect and preserve New Hampshire's land and water resources including farms, forestlands, wildlife habitats, water resources, air quality, and other critical environmental areas."

Strategies to achieve this goal include,

- "Encourage the establishment of municipal agricultural commissions."
- "Establish state and local tax credits for agricultural activities and uses."
- "Provide assistance to municipalities to ensure that their local land use ordinances and regulations are farm friendly."
- "Develop model ordinances for the protection of agricultural land and existing agricultural operations; provide assistance to municipalities to tailor such ordinances to meet local needs and conditions."

New Hampshire also supports agriculture through its Right to Farm Law (Chapter 432: Soil Conservation and Farmland Preservation), which protects farmers and ranchers from nuisance lawsuits and helps to keep farms economically viable by discouraging neighbors from filing lawsuits against agricultural operations. This statute also allows for the purchase of development rights as a means of protecting agricultural lands, stating "Development rights of agricultural lands may be acquired by any

governmental body or charitable corporation or trust which has the authority to acquire interests in land. The restrictions arising from the acquisition of the development rights may be enforced by injunction or other proceeding. Representatives of the holder shall be entitled to enter such land in a reasonable manner and at reasonable times to assure compliance with the restriction.”¹⁷

Other ways of protecting agricultural lands and keeping them viable include: Agricultural Conservation Easements, Transfer of Development Rights Programs, Mitigation Programs, Tax Relief Programs, Tax Incentives for Conservation Easement Donations, Agricultural Economic Development, and Farmland Assistance Programs.

Agricultural Conservation Easements

The most common tool for farmland protection is an agricultural conservation easement. A conservation easement is a deed restriction that landowners voluntarily place on part or all of their land. The easement limits development in order to protect the land’s natural resources. This type of easement is specifically designed for agricultural land and can be donated or sold to a public agency or qualified conservation organization through a “Purchase of Development Rights” (PDR) Program. Once the development rights are sold or donated through a conservation easement, they are in effect “retired”, usually in perpetuity.

The farmer benefits from the sale of the agricultural conservation easement and a lower tax rate on their property. The cost of doing this to the farmer is that most easements are attached to the land for perpetuity, meaning they apply to all future owners of the land and the same restrictions apply to the land for them as well. The value of the land is also lowered with an easement because of the restrictions, specifically on development, that are attached to it.

This tool is beneficial to the farmer who places value on keeping the land for agricultural use, possibly for passing down to future generations, or who simply would like to keep the land as it is in perpetuity because of the value they place on agricultural viability and preservation.

New Hampshire Land and Community Heritage Investment Program

The New Hampshire Land and Community Heritage Investment Program (LCHIP) is an independent state authority that makes matching grants to NH communities and non-profits to conserve and preserve New Hampshire’s most important natural, cultural and historic resources.

Among other projects, LCHIP funds may be used by eligible applicants for the acquisition of real property in fee simple and the acquisition of easement interests in real property.

Tax Relief Programs

RSA 79-A is New Hampshire’s Current Use Taxation Statute, which allows for farm, forest and open space land to be assessed at its use value, rather than its fair market, or highest and best use value for the purposes of local property taxation. This statute states,

¹⁷ <http://www.gencourt.state.nh.us/rsa/html/XL/432/432-mrg.htm>

"It is hereby declared to be in the public interest to encourage preservation of open space, thus providing a healthful and attractive outdoor environment for work and recreation of the state's citizen's, maintaining the character of the state's landscape, and conserving the land, water, forest, agricultural and wildlife resources."

Deerfield participates in the State's current use taxation program in support of local agriculture. This is an important element of a successful agriculture viability campaign and Deerfield should continue to participate in this program.

When land that is in current use is converted to another use, the landowner pays a current use change penalty for doing so. Undeveloped land is not as readily available as it once was and therefore New Hampshire is seeing an increase in the current use change penalties being paid to convert current use lands to other uses. In order for this program to keep being effective municipalities must create a mechanism for mitigating the loss of current use/preservation lands to development. One way to do this is to direct all or a portion of the current use change penalty to the local conservation fund to protect additional land in town, in affect, mitigating the loss that was incurred from the current use change. The Town of Deerfield currently allocates 50% of the current use penalty tax to the Conservation Fund with a cap of \$500,000.

Federal Tax Incentives

Another form of tax relief for farmers comes through federal tax incentives enacted in 2006 to promote donations of conservations easements by private landowners. These incentives were extended through 2009 and are expected to be extended through 2010 as well. This tax incentive has helped to conserve millions of acres of farms across the United States.

The incentive, which applies to a landowner's federal income tax, does the following:

- Raise the deduction a donor can take for donating a voluntary conservation agreement from 30% of their income in any year to 50%.
- Allow farmers and ranchers to deduct up to 100% of their income.
- Increase the number of years over which a donor can take deductions from 6 to 16 years.

The amount of the donation is the difference between the land's value with the agreement and its value without the agreement.

Agricultural Economic Development

An important component to increasing support for local agriculture is an economic development piece. Promoting local agriculture through a "Buy local" campaign is the best way to increase awareness of local agriculture and its benefit to the local economy and as a local food source. Municipalities can support local agricultural producers by implementing and supporting a campaign that promotes local agricultural producers among other local businesses.

Farmland Assistance Programs

The USDA funds several conservation programs each year to assist farmers with natural resources management and stewardship of their land. Programs include:

- Agricultural Management Assistance Program
- Environmental Quality Incentives Program
- Grassland Reserve Program
- Wetlands Reserve Program
- Wildlife Habitat Incentives Program

The USDA also funds the Farm and Ranch Lands Protection Program, which is another Purchase of Development Rights Program. Landowners must work with a sponsoring entity to apply to the program, such as the State of New Hampshire, a municipality, a land conservation organization or a tribal organization. The program then matches funds provided by the sponsoring entity.

Town of Deerfield

Master Plan



Energy Chapter

Deerfield, New Hampshire

2013

*Prepared by the Southern New Hampshire Planning Commission
And funded by the Energy Technical Assistance and Planning (ETAP) program, NH OEP*

Executive Summary

The purpose of this chapter is to promote energy efficiency and conservation in the Town of Deerfield with the expectation that through the implementation of the goals in this chapter, Deerfield can increase energy efficiency, reduce operating costs and cut carbon emissions. This chapter sets out an energy strategy for the Town, building on the goals initially identified in the 2009 Master Plan.

“The Town of Deerfield recognizes that energy efficiency is the cleanest, cheapest, most readily available resource to meet energy needs and will act on the need to reduce energy use in buildings and transportation; and to maintain land uses that absorb greenhouse gases...”

Guided by the values and vision discussed in this chapter, the Deerfield Planning Board will strive to provide leadership supporting the following goals:

1. Establish municipal leadership and coordinate an integrated education, outreach, and workforce training program;
2. Reduce energy use and increase renewable and low carbon dioxide emitting sources of energy
 - For municipal buildings: Net Zero by 2030
 - For transport: Maximize mobility of people, goods, and information while minimizing Vehicle Miles Traveled (VMT)
 - For Deerfield: aspire to become a net zero community;
3. Encourage new construction or renovation that encourages energy independence;
4. Reduce municipal energy costs;
5. Encourage energy efficient land use patterns;
6. Reduce vehicle miles traveled (VMT) through an integrated multi-modal transportation system;
7. Protect natural resources (land, water, wildlife) and maximize land uses that absorb greenhouse gases and provide local sources of food and fiber;
8. Plan for existing and potential climate change impacts and extreme weather events (adaptation); and
9. Support regional and national actions to reduce Greenhouse Gases.

The Deerfield Energy Chapter provides an analysis of energy and fuel resources, needs, scarcities, costs, and problems affecting the municipality and a statement of policy on the conservation of energy. In addition, recommendations and an action plan are outlined for implementation of those recommendations. This chapter for the first time sets out an energy strategy for the Town, building on the goals initially identified in the 2009 Master Plan.

1. Introduction

1.1. Purpose

There are many interrelated elements to consider when addressing energy issues. NH RSA 674:2, III(n) (Master Plan; Purpose and Description) describes the energy section as addressing: an analysis of energy and fuel resources, needs, scarcities, costs, and problems affecting the municipality and a statement of policy on the conservation of energy.

The purpose of this chapter is to promote energy efficiency and conservation in the Town of Deerfield, with the expectation that through implementation of the goals in this chapter, Deerfield can increase energy efficiency, reduce operating costs and cut carbon emissions. This chapter sets out an energy strategy for the Town, building on the goals initially identified in the 2009 Master Plan.



1.2 Energy Opportunity

Energy planning has become a key issue to communities, as energy costs continue to increase and concern grows over the environmental and health costs of major forms of energy production. The United States and New Hampshire primarily use dirty and increasingly expensive fossil fuels of coal and oil for most energy needs – electricity, space heating, and transportation. Reducing our dependence on such energy supplies for our needs serves many purposes, including:

- Reducing operating costs for buildings and vehicles;
- Providing buildings that can operate longer without inputs (i.e. energy sources);
- Increasing building comfort and user productivity;
- Keeping more money in the local and regional economy by using more local sources of energy, services, and food supply;
- Giving people more options for multi-modal mobility (walking, bicycling, private vehicles, public vehicles, etc.); and
- Diversifying energy supplies to include more local supplies such as wood and renewables for more energy security.

Despite the apparent controversy in parts of the U.S. over climate change, evidence demonstrates that extreme weather events have increased in frequency, and energy prices have increased at a rate above that of other goods and services. The country has entered a new energy era, and Deerfield residents have the potential to benefit from that change in many ways.

1.3 Deerfield Energy Chapter Scope, Vision and Goals

Scope

For the purposes of this chapter, the scope will focus on those elements of energy demand and supply most influenced by Deerfield residents and local government policies and actions:

- Buildings/Grounds;
- Transportation; and
- Land Use.

Vision

From the 2009 Deerfield Master Plan: “The Town of Deerfield recognizes that energy efficiency is the cleanest, cheapest, most readily available resource to meet energy needs and will act on the need to reduce energy use in buildings and transportation; and to maintain land uses that absorb greenhouse gases. This will be accomplished through initiatives such as the ‘2030 Challenge’, ‘Energy Star and US Green Building Council Leadership in Energy and Environmental Design (LEED)’ and ‘350/300’.”¹ Goals, objectives and strategies related to energy from the 2009 Deerfield Master Plan can be found in Appendix F.

Goals

Guided by the values and vision discussed in this chapter, the Deerfield Planning Board will strive to provide leadership supporting the following goals:

1. Establish municipal leadership and develop an integrated education, outreach, and workforce training program;
2. Reduce energy use and increase renewable and low carbon dioxide emitting sources of energy
 - For municipal buildings: Net Zero² by 2030
 - For transport: Maximize mobility of people, goods, and information while minimizing Vehicle Miles Traveled (VMT)
 - For Deerfield: aspire to become a net zero community;
3. Encourage new construction or renovation that encourages energy independence;
4. Reduce municipal energy costs;
5. Encourage energy efficient land use patterns;
6. Reduce vehicle miles traveled (VMT) through an integrated multi-modal transportation system;
7. Protect natural resources (land, water, wildlife) and maximize land uses that absorb greenhouse gases and provide local sources of food and fiber;
8. Plan for existing and potential climate change impacts and extreme weather events (adaptation); and
9. Support regional and national actions to reduce greenhouse gases.

¹ 2009 Deerfield Master Plan

² Definition found in Appendix B

7 Nov 2016

TO: Deerfield Board of Selectmen (DBOS)

FROM: Deerfield Conservation Commission (DCC)

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CC: Dfld Planning Board

RE: Responses to questions from Atty Whitley who is preparing testimony for the Town of Deerfield on Environmental Considerations (on Air, Land, Water, and Wetlands) & Orderly Development

NPT BACKGROUND: Northern Pass Transmission (NPT) is proposing an “elective transmission upgrade,” NOT a “reliability project” which means that, as of now, there is NO demonstrated need for the electricity to be brought across NH into the New England grid. NPT stated that once approved, they plan additional lines within existing ROW, as well as new major east/west lines across NH to VT and ME, with NPT as the “backbone.”

LATE OCT 2016 UPDATE: NPT was determined by MA, CT, and RI to be TOO EXPENSIVE and uncertain to provide power through their Clean Power RFP.

THE HOMEWORK: In November, Atty Whitley has the opportunity to bring specific questions to the NH Site Evaluation Committee (SEC) on NPT. He must prepare pre-filed testimony to ensure Deerfield’s topics of concerns are part of the record and can be raised in the adjudicative portion of the SEC process in 2017. In his email of 30 Aug 2016, Atty Whitley outlined the input needed by the SEC from Deerfield to review and apply SEC criteria to determine how it will impact our community. The Deerfield Conservation Commission (DCC) has reviewed the application in areas relevant to “Environment,” with conclusions outlined below.

NHSEC CRITERIA FOR ENVIRONMENT:

- Air & water quality
- Natural environment:
 - Wildlife species
 - Rare plants
 - Rare natural communities
 - Other exemplary natural communities
 - Critical wildlife habitat and significant habitat resources
 - Fragmentation or other alteration of terrestrial or aquatic significant habitat resource

Environment—General: Many environmental impacts are identified and addressed by NHDES permits for Wetlands, Rivers, Shorelands, and Alteration of Terrain. And NH Fish & Game and

Natural Heritage Bureau (NHB) have been consulted for general impacts to wildlife, using the Wildlife Action Plan and NHB inventories.

Deerfield Specific Environmental Impacts: DCC members, volunteers, and residents offer the following information to supplement permit and consulting data:

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- 1) **WATER QUALITY & QUANTITY:** Deerfield is a headwater town. As such, the land use in Deerfield has significant ramifications for the entire Lamprey River, which flows east to the Great Bay. Except for a very thin strip at the western edge of Deerfield, the Town is entirely within the Lamprey River Watershed. Maintaining significant forested areas and vegetated buffers along the Lamprey and around wetlands is essential to store rain water and snow melt. That stored water reduces downstream flooding and protects base stream flow during droughts. A major rationale for keeping the rural character of Deerfield is to continue to provide that essential ecological service to the watershed.
- 2) **AIR QUALITY:** Forests and undeveloped land help absorb pollution, store carbon, and cool the air. Without a Town with primarily rural characteristics, those essential functions are compromised.
- 3) **WILDLIFE:**
 - a. Smooth Green Snakes are a species of "Conservation Concern." One was found along Thurston Pond Road in the Easement in June 2016.
 - b. Black Racer Snakes, also a species of "Conservation Concern," have been documented in the vicinity of the ROW in Deerfield.
 - c. Blandings Turtles also are a species of "Conservation Concern." NH F & G Non Game Program has been tracking them over the past few years, and documented their presence within "excursion distance" for nesting of the NPT ROW. Nests, hatchlings, and adults all live and travel in and through the ROW.
 - d. Many studies document bird and bat injury and mortality from collisions with power lines. Several bat species are making a comeback from near extirpation from White Nose Syndrome. There have been many documented bat sightings in western Deerfield, with a hibernaculum likely in the vicinity. Raising the lines and changing configuration increases the likelihood of more collisions.
- 4) **WETLANDS:**
 - a. One of the top three highest quality vernal pools along the entire 192 mile route is just east of Thurston Pond Rd, and its quality documented in Normandeau report. It will be directly impacted, and likely destroyed, by NPT construction and ongoing Ops & Maintenance.
 - b. DCC and LRAC have provided previous documentation of continued degradation and destruction during ongoing PSNH/Eversource operations.

5) LANDSCAPE FRAGMENTATION

- a. NPT is the only hardscape, fragmenting the otherwise unbroken forest between Mt Delight and Middle Roads in the western third of Deerfield.

6) TOWN FOREST: DOWST CATE

- a. Abuts major substation expansion, with sound, visual, and wildlife habitat/connectivity impacts.

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7) IMPACTS ON WETLANDS AND SOILS FROM UNCONTROLLED ACCESS:

- a. Addressed in LRAC letter of 4 Aug 2016.

8) LARGE RESERVOIRS: A recent study found that contrary to previous understanding, large reservoirs produce higher amounts of greenhouse gases that contribute to climate instability and rapid climate change than assumed.

DCC ON ORDERLY DEVELOPMENT (additional considerations based on 7 Nov 16 Comments memo by Planning Board to DBOS):

Accomplishing “orderly development” in NH requires a plan and also public/private partnerships to implement that plan. In Deerfield, the Planning Board updates the Master Plan. DCC prepared the **Open Space Plan (DOSP)** chapter of the **Master Plan** and is the lead for its implementation. The DOSP defines a 50 year+ strategy to protect the ecological integrity and maintain the rural character of the Town, with a minimum of 38% of the land retained in a “Green Infrastructure” open space network.

Before DOSP, from 1987-1992, DCC lead Deerfield’s participation in the \$50 million Land Conservation Investment Program (LCIP), initiated by Governor Sununu. Deerfield received substantial LCIP funding to create a seven owner protected corridor in northeastern Deerfield, part of which is adjacent to and in the vicinity of the proposed substation expansion, as well as the Dowst-Cate Town Forest. After LCIP, DCC members were among the founding members of the Bear Paw Regional Greenway, which originally connected seven towns, and now links 11.

Over the years, DCC members have worked directly with more than 25 individual landowners to conserve properties within the Green Infrastructure network. To do so, DCC has gotten consistent support from Town voters, and also partnered with several regional and statewide conservation organizations to permanently protect those lands with conservation easements.

The summary above is relevant because none of it was recognized or cited by Mr. Varney of Normandeau, either in his reports, or in his expert testimony during the Technical Sessions. DCC believes that the presence of industrial scale towers will reduce landowner interest in helping to implement the Green Infrastructure Network described in the DOSP. Such towers speed the transition to a suburban, rather than rural town, threatening completion of the ecologically valuable, currently functional, and essential Green Infrastructure system.

In our role as responsible for completion of the DOSP in the Master Plan, DCC members strongly object to Mr. Varney’s expert testimony on Orderly Development and Land Use Planning during the Technical Sessions. It is totally unacceptable to claim “no effect” by NPT, based on brief meetings only with the six professional planners, and one brief telephone conversation with the

professional planner for Deerfield, Mr. Coogan, who is part time. Especially so, because in addition to the impacts of proposed towers, Deerfield is facing a major expansion of the Substation. NPT has not sought BOS, Planning Board, or DCC input, nor has NPT, it appears recognized the nature and extent of planning and conservation work over the past 30 years to shape the **Town's Orderly Development and Land Use (attached)**.

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Unlike many places in the US, land use planning in NH often has a very minor presence, and minimal influence on development. And in many NH towns, engineering details dominate over design standards and innovative planning options. Professional planners are not common. It is up to the knowledge, creativity, and dedication of local volunteers, and interested citizens, to have any hope of growing in a way that meets the desires of residents, as well as regions. Deerfield has those. They are essential to any good local or regional planning success. It is hard to understand how an "expert" who claims to know NH so well would meet only with a few professional planners, once at most, with no agenda, and with no notes taken, can accurately represent the state of local planning efforts. *Appendix 41* provides no substantive information about the long term and integrated planning in places like Deerfield. At least 31 towns will be directly impacted by NPT. How can speaking briefly to seven professional planners cover the bases, or meet SEC 301.09 criteria?

NH SITE EVALUATION COMMITTEE (SEC) RELEVANT EVALUATION CRITERIA:

NHSEC Rules Site 301.07 Effects on Environment. Each application shall include the following information regarding the effects of, and plans for avoiding, minimizing, or mitigating potential adverse effects of, the proposed energy facility on air quality, water quality, and the natural environment (*Source: #10994, eff 12-16-15*):

- (a) Information including the applications and permits filed pursuant to Site 301.03(d) regarding issues of **air quality**;
- (b) Information including the applications and permits filed pursuant to Site 301.03(d) regarding issues of **water quality**;
- (c) Information regarding the **natural environment**, including the following:
 - (1) Description of how the applicant identified significant **wildlife species, rare plants, rare natural communities, and other exemplary natural communities** potentially affected by construction and operation of the proposed facility, including communications with and documentation received from the NH department of fish and game, the New Hampshire natural heritage bureau, the United States Fish and Wildlife Service, and any other federal or state agencies having permitting or other regulatory authority over fish, wildlife, and other natural resources;
 - (2) Identification of significant wildlife species, rare plants, rare natural communities, and other exemplary natural communities potentially affected by construction and operation of the proposed facility;
 - (3) Identification of **critical wildlife habitat and significant habitat resources** potentially affected by construction and operation of the proposed facility;

(4) Assessment of potential impacts of construction and operation of the proposed facility on significant wildlife species, rare plants, rare natural communities, and other exemplary natural communities, and on critical wildlife habitat and significant habitat resources, including **fragmentation or other alteration of terrestrial or aquatic significant habitat resources**;

(5) Description of the measures planned to avoid, minimize, or mitigate potential adverse impacts of construction and operation of the proposed facility on wildlife species, rare plants, rare natural communities, and other exemplary natural communities, and on critical wildlife habitat and significant habitat resources, and the alternative measures considered but rejected by the applicant; and

(6) Description of the status of the applicant's discussions with the New Hampshire department of fish and game, the New Hampshire natural heritage bureau, the United States Fish and Wildlife Service, and any other federal or state agencies having permitting or other regulatory authority over fish, wildlife, and other natural resources.

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NH SEC Rules Site 301.09 Effects on Orderly Development of Region. Each application shall include information regarding the effects of the proposed energy facility on the orderly development of the region, including the views of municipal and regional planning commissions and municipal governing bodies regarding the proposed facility, if such views have been expressed in writing, and master plans of the affected communities and zoning ordinances of the proposed facility host municipalities and unincorporated places, and the applicant's estimate of the effects of the construction and operation of the facility on:

(a) Land use in the region, including the following:

(1) A description of the prevailing land uses in the affected communities; and

(2) A description of how the proposed facility is consistent with such land uses and identification of how the proposed facility is inconsistent with such land uses;

(b) The economy of the region, including an assessment of:

(1) The economic effect of the facility on the affected communities;

(2) The economic effect of the proposed facility on in-state economic activity during construction and operation periods;

(3) The effect of the proposed facility on State tax revenues and the tax revenues of the host and regional communities;

(4) The effect of the proposed facility on real estate values in the affected communities;

(5) The effect of the proposed facility on tourism and recreation; and

(6) The effect of the proposed facility on community services and infrastructure;

(c) Employment in the region, including an assessment of:

(1) The number and types of full-time equivalent local jobs expected to be created, preserved, or otherwise affected by the construction of the proposed facility, including direct construction employment and indirect employment induced by facility-related wages and expenditures; and

(2) The number and types of full-time equivalent jobs expected to be created, preserved, or otherwise affected by the operation of the proposed facility, including direct employment by the applicant and indirect employment induced by facility-related wages and expenditures