AGENDA
VILLAGE OF NORTHBROOK
ARCHITECTURAL CONTROL COMMISSION

THURSDAY, NOVEMBER 14, 2019
TERRACE ROOM (SECOND FLOOR)
VILLAGE HALL (1225 CEDAR LANE)

5:30 PM

1. Call to Order
2. Roll Call
3. Review of ACC Minutes -- October 10, 2019 meeting
4. Public Comments Regarding Items Not on the Agenda
5. Updated Information – Study of SFR Additions for Determining Threshold for Requiring Fire Sprinklers
6. Update on Procedures for Switching to Spray Foam Insulation During Construction
7. Sustainability Checklist Discussion
8. New Single Family Home Elevations
   a. 1331 Pfingsten Rd. (R-4 District) – Victor Melnikov, architect
9. New Business
10. Old Business
11. Adjourn (Note: Due to a Scheduling Issue, the Meeting must Adjourn by 7:00 PM)

The Village of Northbrook is subject to the requirements of the Americans with Disabilities Act of 1990. Individuals with disabilities who plan to attend this meeting and who require certain accommodations in order to allow them to observe and/or participate in this meeting, or who have questions regarding the accessibility of this meeting or the facilities, are requested to contact Greg Van Dahm or Debra J. Ford (847-272-5050) promptly to allow the Village of Northbrook to make reasonable accommodations for those persons. Hearing impaired individuals may call the TDD number, 847-564-8465, for more information.
Updated Information – Study of SFR Additions for Determining Threshold for Requiring Fire Sprinklers
TO: ARCHITECTURAL CONTROL COMMISSION  
FROM: THOMAS PUPARD, DIRECTOR  
DATE: NOVEMBER 8, 2019  
RE: CONTINUED REVIEW OF THRESHOLD TO USE FOR SINGLE FAMILY ADDITIONS REQUIRING A SPRINKLER SYSTEM

During the November 14, 2019 ACC meeting, we would like to continue the discussion we had with the commission on the topic of when fire sprinkler systems should be required when a single family home is being added onto. The ACC had discussed this previously on July 11 and after some debate recommended that when the amount of building addition and alteration of the existing home exceeded 166% of the existing floor area, that a fire sprinkler would be warranted. Minutes from the July 11 ACC meeting are attached.

When the Board of Trustees reviewed the code amendments on July 23, 2019, they expressed concerns about the approach, how much this would add to construction costs and how subjective the calculation of the area of alteration could be when reviewing plans. They asked the staff to do more research and return with more information. Minutes from the July 23 Board meeting are attached.

The staff has been reviewing a series of home plans that have been reviewed over the years to try and create a representative data set to test different thresholds.

Attached to this report is a summary table and 19 different sets of home plan sheets that summarize the area of addition and alteration as a percentage of the original floor area. The table shows the data and addresses of homes that would require sprinklers using two alternate methods:

1. If the 166% combined addition and alteration is used, and
2. If a threshold of 115% increase in floor area is used.

The two approaches yield similar numerical approaches with the 166% approach requiring 10 of 19 homes to be sprinklered and the 115% of floor area approach requiring 9 of 19 homes to be sprinklered. The difference between the two approaches is the homes impacted by the different standards.

We suggest the commission look at the homes that are closest to the threshold to see if the “lines drawn” with the suggested thresholds are reasonable.

We would like to review the data with the commission on the 14th to see if the information causes the commission to modify the prior recommendation. We are sure the Board will appreciate the ACC’s insights.
## Review of Permit Data for Large Single Family Home Additions

**Study to Determine Threshold for Fire Sprinklers**

<table>
<thead>
<tr>
<th>Property</th>
<th>Amount of Original Area Altered (% of Original)</th>
<th>Amount of Bldg. Addition (% of Original)</th>
<th>Total Amount Added + Altered</th>
</tr>
</thead>
<tbody>
<tr>
<td>2100 Maple Ave</td>
<td>0%</td>
<td>74%</td>
<td>74%</td>
</tr>
<tr>
<td>2110 Center Ave.</td>
<td>58%</td>
<td>19%</td>
<td>77%</td>
</tr>
<tr>
<td>821 Division St.</td>
<td>16%</td>
<td>71%</td>
<td>87%</td>
</tr>
<tr>
<td>606 Marshall Rd.</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>948 Meadow Rd.</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>1021 Midway Rd.</td>
<td>0%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>1010 Midway Rd.</td>
<td>48%</td>
<td>89%</td>
<td>137%</td>
</tr>
<tr>
<td>1120 Midway Rd.</td>
<td>15%</td>
<td>141%</td>
<td>156%</td>
</tr>
<tr>
<td>1116 Dell Rd.</td>
<td>26%</td>
<td>134%</td>
<td>160%</td>
</tr>
<tr>
<td>1922 Birch Rd.</td>
<td>100%</td>
<td>68%</td>
<td>168%</td>
</tr>
<tr>
<td>601 Gregg Rd.</td>
<td>0%</td>
<td>175%</td>
<td>175%</td>
</tr>
<tr>
<td>1261 Country Ln.</td>
<td>38%</td>
<td>142%</td>
<td>180%</td>
</tr>
<tr>
<td>1011 Whitfield Rd.</td>
<td>29%</td>
<td>161%</td>
<td>190%</td>
</tr>
<tr>
<td>1193 Greenbriar Ln.</td>
<td>83%</td>
<td>111%</td>
<td>194%</td>
</tr>
<tr>
<td>1017 Whitfield Rd.</td>
<td>73%</td>
<td>124%</td>
<td>197%</td>
</tr>
<tr>
<td>1132 Dell Rd.</td>
<td>100%</td>
<td>100%</td>
<td>200%</td>
</tr>
<tr>
<td>2283 Greenview Rd.</td>
<td>100%</td>
<td>150%</td>
<td>250%</td>
</tr>
<tr>
<td>1103 Midway Rd.</td>
<td>100%</td>
<td>170%</td>
<td>270%</td>
</tr>
<tr>
<td>2105 Greenview Rd.</td>
<td>100%</td>
<td>295%</td>
<td>395%</td>
</tr>
</tbody>
</table>

**Below the Threshold of 166% Alteration + Addition**

**10 Homes Exceed 166% Alteration + Addition**

<table>
<thead>
<tr>
<th>Property</th>
<th>Amount of Bldg. Addition (% of Original)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2110 Center Ave.</td>
<td>19%</td>
</tr>
<tr>
<td>1922 Birch Rd.</td>
<td>68%</td>
</tr>
<tr>
<td>821 Division St.</td>
<td>71%</td>
</tr>
<tr>
<td>2100 Maple Ave</td>
<td>74%</td>
</tr>
<tr>
<td>1010 Midway Rd.</td>
<td>89%</td>
</tr>
<tr>
<td>606 Marshall Rd.</td>
<td>100%</td>
</tr>
<tr>
<td>948 Meadow Rd.</td>
<td>100%</td>
</tr>
<tr>
<td>1021 Midway Rd.</td>
<td>100%</td>
</tr>
<tr>
<td>1132 Dell Rd.</td>
<td>100%</td>
</tr>
<tr>
<td>1193 Greenbriar Ln.</td>
<td>111%</td>
</tr>
</tbody>
</table>

**Below the Threshold of 115% Addition**

**9 Homes Exceed 115% Addition**

<table>
<thead>
<tr>
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<tr>
<td>1017 Whitfield Rd.</td>
<td>124%</td>
</tr>
<tr>
<td>1116 Dell Rd.</td>
<td>134%</td>
</tr>
<tr>
<td>1120 Midway Rd.</td>
<td>141%</td>
</tr>
<tr>
<td>1261 Country Ln.</td>
<td>142%</td>
</tr>
<tr>
<td>2283 Greenview Rd.</td>
<td>150%</td>
</tr>
<tr>
<td>1011 Whitfield Rd.</td>
<td>161%</td>
</tr>
<tr>
<td>1103 Midway Rd.</td>
<td>170%</td>
</tr>
<tr>
<td>601 Gregg Rd.</td>
<td>175%</td>
</tr>
<tr>
<td>2105 Greenview Rd.</td>
<td>295%</td>
</tr>
</tbody>
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### Area Categories

<table>
<thead>
<tr>
<th>Category</th>
<th>Totals (SF)</th>
<th>% Increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Existing</td>
<td>1725.00</td>
<td></td>
</tr>
<tr>
<td>Renovation</td>
<td>0.00</td>
<td></td>
</tr>
<tr>
<td>Addition</td>
<td>1282.00</td>
<td>74%</td>
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<tr>
<td><strong>Total Change</strong></td>
<td><strong>1282.00</strong></td>
<td><strong>74%</strong></td>
</tr>
</tbody>
</table>

**2100 Maple**

**CV:** $150,000

**Permit Issuance:** 05/05

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**Site Plan**

**Left Elevation**

**Front Elevation**

**First Floor Plan**

**Second Floor**
<table>
<thead>
<tr>
<th>AREA CATEGORIES</th>
<th>TOTALS (SF)</th>
<th>% INCREASE</th>
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<tr>
<td>EXISTING</td>
<td>1972.00</td>
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<td>ADDITION</td>
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</tr>
<tr>
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CV: $350,000 PERMIT ISSUANCE: 04/19

77%
821 DIVISION  CV: $80,000.  PERMIT ISSUANCE: 04/19

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<tr>
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<tr>
<td>ADDITION</td>
<td>876.00</td>
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<td>TOTAL CHANGE</td>
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87%
606 MARSHALL  CV: $ ?? PERMIT ISSUANCE: 04/03

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<td>0%</td>
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<tr>
<td>ADDITION</td>
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<td>100%</td>
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<td>AREA CATEGORIES</td>
<td>TOTALS (SF)</td>
<td>% INCREASE</td>
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<td>------------</td>
<td>------------</td>
</tr>
<tr>
<td>EXISTING</td>
<td>1067.00</td>
<td></td>
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<tr>
<td>RENOVATION</td>
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<td>0%</td>
</tr>
<tr>
<td>ADDITION</td>
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<td>100%</td>
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<tr>
<td>TOTAL CHANGE</td>
<td>1067.00</td>
<td>100%</td>
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948 MEADOW
CV: 105,000
PERMIT ISSUANCE: 06/02

100%
**1021 MIDWAY**

<table>
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<th>TOTALS (SF)</th>
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<tr>
<td>EXISTING</td>
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<tr>
<td>RENOVATION</td>
<td>0%</td>
<td></td>
</tr>
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<td>TOTAL CHANGE</td>
<td>1150.00</td>
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CV: $111,600  PERMIT ISSUANCE: 10/01

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**110%**
### 1010 MIDWAY

**CV:** $154,000  
**PERMIT ISSUANCE:** 07/07

<table>
<thead>
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<tr>
<td>ADDITION</td>
<td>1057.00</td>
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</tr>
<tr>
<td>TOTAL CHANGE</td>
<td>1662.00</td>
<td>137%</td>
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</tbody>
</table>

**TOTAL CHANGE:** 137%

![Blueprints and exterior photo of a house](image-url)

**Blueprints (top and bottom images):**

- **Existing First Floor Plan**
- **First Floor Plan**
- **Second Floor Plan**
<table>
<thead>
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<th>AREA CATEGORIES</th>
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<th>% INCREASE</th>
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<td>TOTAL CHANGE</td>
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1120 MIDWAY  
CV: $191,000  
PERMIT ISSUANCE: 05/05  

156%
### Area Categories

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<th>Totals (SF)</th>
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<tr>
<td>Existing</td>
<td>1076.00</td>
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<tr>
<td>Renovation</td>
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<tr>
<td>Total Change</td>
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**1116 Dell**  
**CV: $65,000**  
**Permit Issuance: 06/18**
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<td>2984.00</td>
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168%
601 GREGG  CV: $157,380  PERMIT ISSUANCE: 09/01

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<td>EXISTING</td>
<td>1191.00</td>
<td></td>
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<td>RENOVATION</td>
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<td>TOTAL CHANGE</td>
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175%
<table>
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180%
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<tr>
<td>ADDITION</td>
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<tr>
<td>TOTAL CHANGE</td>
<td>1939.00</td>
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190%
### 1193 GREENBRIAR
**CV:** $125,000  **PERMIT ISSUANCE:** 06/19

<table>
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<th>TOTALS (SF)</th>
<th>% INCREASE</th>
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<tbody>
<tr>
<td>EXISTING</td>
<td>1365.00</td>
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<tr>
<td>RENOVATION</td>
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</tr>
<tr>
<td>TOTAL CHANGE</td>
<td>2645.00</td>
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**194%**

[Site Plan]

[Existing Elevations]

[Proposed Elevations]

[Proposed Plans]
**1017 Whitfield**

**CV:** $165,000.  **PERMIT ISSUANCE:** 07/05

<table>
<thead>
<tr>
<th>AREA CATEGORIES</th>
<th>TOTALS (SF)</th>
<th>% INCREASE</th>
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<tbody>
<tr>
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<tr>
<td>RENOVATION</td>
<td>777.00</td>
<td>73%</td>
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<tr>
<td>ADDITION</td>
<td>1328.00</td>
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<tr>
<td>TOTAL CHANGE</td>
<td>2105.00</td>
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**197%**
<table>
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<th>AREA CATEGORIES</th>
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<tr>
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<tr>
<td>TOTAL CHANGE</td>
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<td>200%</td>
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CV: $126,000  PERMIT ISSUANCE: 07/05
<table>
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<tr>
<td>ADDITION</td>
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<td>150%</td>
</tr>
<tr>
<td>TOTAL CHANGE</td>
<td>3068.00</td>
<td>250%</td>
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2283 GREENVIEW  CV: $300,000  PERMIT NOT ISSUED: 08/19

250%
### 1103 MIDWAY

**CV:** $200,000  
**PERMIT ISSUANCE:** 10/05

<table>
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<th>AREA CATEGORIES</th>
<th>TOTALS (SF)</th>
<th>% INCREASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXISTING</td>
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<td>RENOVATION</td>
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<tr>
<td>ADDITION</td>
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<td>170%</td>
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<tr>
<td>TOTAL CHANGE</td>
<td>2560.00</td>
<td>270%</td>
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</tbody>
</table>

**TOTAL CHANGE:** 2560.00

**% INCREASE:** 270%

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**CV:** $200,000  
**PERMIT ISSUANCE:** 10/05

**TOTAL CHANGE:** 2560.00

**% INCREASE:** 270%
<table>
<thead>
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<th>AREA CATEGORIES</th>
<th>TOTALS (SF)</th>
<th>% INCREASE</th>
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<td>TOTAL CHANGE</td>
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<td>395%</td>
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2105 GREENVIEW  
CV: $250,000  
PERMIT ISSUANCE: 03/15  

395%
APPROVED

MINUTES OF THE ARCHITECTURAL CONTROL COMMISSION
VILLAGE OF NORTHBROOK
COOK COUNTY, ILLINOIS
JULY 11, 2019

ACC Commissioners present (5):
Cliff Town, Chairman
F. Dirk Heidbrink
John Albrecht
Robert Katz
David Menn

ACC Commissioners absent (1):
Chris Urbanczyk

Village Staff Present:
Tom Poupard, Director of DPS
Jackie Clawson, Building Official
Swati Pandey, Senior Planner
Corey Friedman, Electrical Inspector
Kevin Frangiamore, Fire Inspector
Colleen Brunner, Recorder

Others Present:
Melissa Woloszyn, Applicant for Rink Shelter
Megan Woloszyn, Family
Lu Ann Brocato, Family friend
Bill Schermerhorn, Family Friend

Call to Order
Chairman Town called the meeting to order in the Terrace Room of Village Hall, 1225 Cedar Lane, at 5:30 p.m.

Roll Call
Roll was called. A quorum was present.

Review of Minutes
A motion was made and seconded to approve the June 13, 2019 minutes, with the following changes.
On a voice vote the motion passed.
Page 4, line 13, change the word Building to Region.
Page 4, line 20, remove the word this.

Public Comments Regarding Items Not on the Agenda
None
VGO District Permit Request at 1225 Cedar Lane - Tower Rink Shelter

Swati Pandey recapped the project with a power point presentation in addition to the packet material. The Village owns the property and it is leased by the Northbrook Park District. The applicant is proposing to install an all season shelter on the site. The Park District has given their approval of the proposed project.

Lu Ann Brocato, spoke for the group. This structure is being built through donations collected in memory of Nicholas Woloszyn who passed away in 2016. He loved to ice skate at the pond with his friends. They are proposing an open structure with overhead heaters, fireplace, bench and patio. Samples of the proposed materials were presented. The landscaping of the site and construction of the bench will be part of an Eagle Scout project. The Park District will maintain the site.

Comments from the Commissioners include, 1) perhaps there could be two benches in the shelter; 2) suggested the overhead heaters could be on timers; 3) can the lighting be tied to the rinks site in the winter and on a timer in the summer; 4) consider the installation of solar panels on the roof for lighting and 5) generally think it’s a benefit to the community. A motion was made and seconded to approve the shelter as submitted. On a voice vote the motion passed.

Review of Draft Building Codes and Local Amendments

With the update of the 2012 the codes, they reduced some of the local amendments. The current 2017 NEC & 2018 ICC Code updates deserve some review. Corey Friedman and Kevin Frangiamore explained some of the changes.

2018 IFC- Currently above ground fuel tank storage is not allowable. Staff would like to allow 2,000 gallon diesel tanks and smaller gas tanks in addition to decreasing the distance from residential properties. New tanks are double walled and bullet proof. Diesel is also nonflammable. Frangiamore stated the distance for diesel could be 100 feet and 300 feet for gas tanks. The Commission discussed the issue and a motion was made and seconded to approve above ground fuel tanks for diesel up to 2000 gallons, with a distance of 100 feet and 500 gallons for gas, with a distance of 300 feet from a residential property. On a voice vote the motion passed.

2018 IPSC- the Commission looked at the fencing requirement around safety covers and fencing. A motion was made and seconded to leave the code as it is. On a voice vote the motion passed.

NEC 2017- this amendment includes when building a new single family home, there is a requirement to provide conduit for potential electric car charging stations. The Village will allow some MC cables in commercial/office alterations. Also, clarification was made on shunt trip on commercial alterations.

2018 IRC - Fire Sprinklers for Large Scale Additions

Sprinklers must be installed for 1-2 family dwellings. Northbrook is considering 3 options for large scale additions to single family homes. Staff and members discussed the 3 options and it is questionable what determines when an alteration is basically a new home. After much discussion, they made a motion, which was seconded to recommended option #3 from exceeding 150% of the existing habitable floor area to 166%. On a voice vote the motion passed.

Zoning Code Language use to Determine New Versus Addition

You must keep at least 60% of the structure to be considered an alteration.

Mechanical Contractors Licensing

Effective 1-1-2020, if an HVAC installation requires a permit, the contractor will be required to be licensed with the Village.
Review of Green Building Code (GBC)
Staff would like to spend some time to think the code through and move towards a reduction in permit fees to encourage people to do small and large scale improvements.

Staff is suggesting an effective date of 1-1-20 20 for the new building codes.

Report on Green Building Incentives and Consideration of Green Building Code (IGBC)
Mr. Poupard stated that now that staff has completed the work on the building code amendments they can focus on the Green Initiatives. The goal is to be completed by the end of the calendar year.

New Single Family Home Elevations
a. 2216 Ash Lane (R-4 District), Town Studios, Inc., architect
b. 2219 Brentwood Road (R-4 District), SKI Architecture

A motion was made and seconded to approve the elevations as submitted. Member Town abstained on 2216 Ash; otherwise all unanimously approved the elevations.

New Business
Macy’s will close this coming Sunday July 13th. August 1st the demolition should begin. No building permit plans for the interior work have been submitted.

Lori Jordison is no longer a commissioner of the ACC. Staff is waiting for applications to fill the position.

Member Albrecht wondered if a student could be a member of the ACC. Poupard stated that would take an amendment but they can come to meetings or write President Frum to be an ex-officio member.

Old Business
Eataco at 1350 Shermer Road opened for business.

Adjourn
There being no further business, a motion was made and seconded to adjourn the meeting. On a voice vote, the motion was unanimously carried and the meeting adjourned at 7:55 pm.

Respectfully submitted,
Colleen Brunner, Recorder
A LITE DINNER WILL BE PROVIDED

1. ROLL CALL

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<th>Attendee Name</th>
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<tr>
<td>Sandra Frum</td>
<td>Village President</td>
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<td>Kathryn Ciesla</td>
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<td>Bob Israel</td>
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<td>Jason Han</td>
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<td>Heather Ross</td>
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<td>Johannah Hebl</td>
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2. MINUTES APPROVAL

Board of Trustees - Special Committee of the Whole - Jun 8, 2019 9:00 AM

RESULT: ACCEPTED [UNANIMOUS]
MOVER: Bob Israel, Trustee
SECONDER: Muriel Collison, Trustee
AYES: Frum, Ciesla, Israel, Collison, Han, Ross, Hebl

3. PUBLIC COMMENT TIME

No Public Comment

4. DISCUSSION TOPICS

A. Preliminary Review - Village Regulation of Short-Term Rentals (Airbnb)

Director of Development and Planning Services Tom Poupard addressed the topic of Short-Term Rental or Airbnb’s. He stated that the Northbrook Zoning Code does not specifically address this topic and it has been a matter of both confusion and concern by property owners and neighbors. A short-term rental can provide an individual with supplemental income and a means of making a home more affordable. He provided a diagram showing the various AIRBNB’s currently available for rent in the area. Director Poupard noted they have become a popular way to travel. Often times they are cheaper than a hotel. He then reviewed some types of short term rentals: a spare
bedroom (guest room) this is popular for an empty nester; entire dwelling unit is available for rental on short term basis. However there two types of “whole house” rentals: (1) strict house rules are established that prohibit activities such as parties and large events; or (2) an entire house with no house rules. Because the Northbrook Zoning Code is silent on this issue, Staff has been relying on a statute that defines a hotel/motel as a place where rooms are available for 30 days or less.

Director Poupard addressed a specific enforcement activity in 2013. He explained staff was alerted by neighbors that a home with a swimming pool was regularly used for parties and large gatherings. Staff took this matter to court and was successful in getting it resolved.

More currently staff has been dealing with a similar case; a very large house on Voltz Road. Ads show it is being available on AIRBNB and multiple other sites. The home is being used for events and gatherings of all sizes. The Village is also prosecuting this case. The owners have stated they will take down all advertising; however, that is difficult to monitor given the many websites available. Village is asking for an order requiring that if the house is rented it must be for at least six months. Property is now listed for sale. Staff is monitoring the situation.

Director Poupard next mentioned the letter received from neighbors objecting to a homeowner using AIRBNB to rent out a single room on nightly basis.

President Frum questioned if the State was looking at controlling, regulating, or limiting municipalities control. In response, Attorney Weiss stated there is nothing new thus far.

Director Poupard stated staff has reviewed Barrington: they prohibited anything less than one month; Lincolnshire; nothing less than three months; Schaumburg short term rental units with two or more bedrooms available, but a Bed and Breakfast requires special permit. Renting out a single room to a guest is treated as an allowed use or home occupation.

Director Poupard stated he found, while vacationing, Pasadena had a nice way for dealing with short term rentals. The owner has to live there part of year. All neighbors have to be notified. No parties are allowed and they can’t turn them into filming locations. If the Board is interested, this is a good example. Another thing they do is make it clear if something bad happens while out of premises, it is still the property owner’s problem. Director Poupard stated staff is seeking policy direction from the Board. He added that over time he expects this will continue to grow in popularity.

President Frum and Trustee Israel stated they have heard complaints in regards to parties on certain sites. Trustee Israel noted there are a number of companies that bring people in from around the country. Instead of a hotel, they want a quiet room or a house to go home to. Some like
a quiet room to go to at the end of the day, instead of hotel. I feel we should not regulate single rooms.

Trustee Collison agreed with Trustee Israel. She did state she had concerns about renting a whole house. Concerns with the rental being for months. Not comfortable with short term rentals for only a couple of weeks. Trustee Han noted his concern with room rentals. President Frum stated she has heard complaints. Director Poupard stated that when homes have transient guests, neighbors become concerned.

Trustee Collison discussed her experience of staying in a treehouse rental - in a residential neighborhood in Schaumburg. She was not sure how that owner was allowed to do this. President Frum noted her concern with whole house rentals and stated she liked the idea of permitting so the Village is aware. Trustee Collision suggested also taxing short term rentals.

Trustee Hebl stated she did not see this as a big concern yet. She did not the like transient part of it, but she does not want to discourage home sharing. The problem will be how to regulate, and enforcement. Her inclination is to do something simple.

Trustee Hebl suggested limiting single rooms to a month. She felt for now, it was cleaner, clearer.

Trustee Ross stated she agreed with Trustee Israel. If the rental is for a whole house, it makes sense to establish regulations. She stated she did not have a problem with renting a room or two. Trustee Ross noted statistics show the crime rates from this type of rental is low.

Trustee Han commented that when it comes to a whole house we need to regulate, but it is not necessary for room sharing.

Trustee Ciesla said the Village also needs to look at our definition of family to be up to date with current laws.

President Frum stated a majority of the Board is looking to establish regulations that make it legal to rent a whole house, but not for less than a month. A majority of the Board is not ready to regulate or place prohibitions on single room rentals.

Director Poupard stated he will work with Attorney Weiss on language. Director Poupard stated staff will work with the Village Attorney on the zoning, etc.

B. Review of ACC & Electrical Commission Recommendations - Local Building Code Amendments
Director Poupard explained that international building codes are established to have more uniform standards for builders. The new international building codes come out every three years and the Village has typically adopted new codes every other cycle - or every six years. The Village is now using the 2011 National Electrical Code and 2012 Code Series. The Village is presently looking at the 2017 NEC and 2018 ICC series. Director Poupard reviewed a few of the interesting amendments the Village is considering and make sure the Board is in favor of the proposed changes.

1 - The first is a “green amendment” incorporated into the National Electrical Code. Garage: if buy or build a new garage, conduit must be included for electrical vehicle charging equipment. Director Poupard explained he was not aware of this being required anywhere else and believes it is a very progressive change that will also be cost effective.

Trustee Israel asked if it would require a power upgrade. Director Poupard stated the Electrical Commission determined they would not, but if it is required the total cost to upgrade would be approximately $220. The Board stated they were all in favor of this amendment.

2 - IRC - Fire Sprinkler requirement for major additions to existing homes. The base building code has an exemption that makes it clear that if an existing home has an addition and it does not include a sprinkler system - the homeowner is not required to add a sprinkler system, regardless of how large the addition may be. This became a concern during the process when residents decided to keep up only a few exterior walls and construct a large addition and say it is an addition, not a new home. The Zoning Code includes a standard that stipulates an addition is defined when you keep up at least 60% of your exterior walls. When staff discussed this with the Architectural Control Commission (ACC) two concerns were discussed. The feeling is people are being rewarded for inferior construction - keeping up old walls and then not having to sprinkler the building. Also the homeowner/contractor believes they are saving in property taxes. The ACC suggested creating a new building permit classification - a major addition where sprinklers would be required. The question is defining the threshold when a sprinkler system is needed? The ACC spent quite a lot of time discussing how to establish that threshold.
Director Poupard then discussed what he referred to as “pop up additions” where a ranch home is given a second floor. He displayed an example, and discussed the amount of square footage added. The Fire Department has noted their concerns about these effectively being new homes that should have a sprinkler system. There is some point where a house is being gutted out and a sprinkler system should be required. If the original home is 1,000 square feet and they renovate and add an additional 1,000 square feet, knock down walls of at least 60% of first floor - the Fire Department feels this is when a sprinkler system should be required.

President Frum questioned how easy is it to make that determination? Director Poupard stated DPS staff preferred an approach where the amount of floor area added is used, because it would not be subjective; however, the Fire Department prefers an approach that also looks at how spaces have been altered. This requires more of a judgment call.

Director of Fire Prevention Kevin Frangiamore stated he has been in a few homes that have been completely gutted. Everything was new (basically a new home except for the majority of one floor). In his mind this would be a good example of a home that should be required to install sprinklers. He stated he is not looking to ding pop-ups, but there should be a limit when you are taking an existing home and basically renovate the entire home.

President Frum commented this would be the time to retrofit and add a sprinkler system. It is cost effective.

Trustee Ciesla questioned the type of policy staff is looking to draft? We want to continue to offer starter homes for people to live in in our community. She questioned if the number of fires in Northbrook are significant enough to require people to undertake this expense. In response, Fire Chief Carlson responded there were five fires last year. Trustee Ciesla stated she felt this amendment would be a burden and she was not in favor of imposing this change. President Frum commented it is no longer a starter home when you are talking about 150% increase to the home.

Trustee Collison stated she is going through this now with a remodeling project in her own home. The permit prices in Northbrook are crazy high and the fees for tree protection are way too much. She commented if she were told to put sprinklers in, she would not be happy. She noted that she would like some of the construction requirements, particularly those related to trees to be discussed and reevaluated.

Trustee Hebl stated she also remodeled and adding a sprinkler system cost her $10,000. We are talking about consistency. The Board discussed the pros and cons.
Trustee Ciesla stated she understands the need for consistency. It is important, but this would be an additional burden on our residents.

Fire Chief Carlson questioned if when you are looking to purchase a home in Northbrook, would you look to buy a home with a sprinkler. In response, Trustee Israel commented he didn’t believe that having a sprinkler system would be the winning factor.

President Frum stated maybe 166% is not the appropriate threshold. Director Frangiamore stated this is simplifying it for us. This rule simplifies how we get to the maximum allowed, before requiring sprinklers. He noted this requirement might affect five or six homes a year. The present definition has also required sprinklers to be put in.

Director Poupard noted this topic also sparked a lot of discussion at the ACC. President Frum questioned if anyone wanted to move forward with this amendment? Trustees Ciesla and Collision noted they were not in favor. Trustee Ciesla asked staff to come back with more information. Director Poupard stated staff can come back with illustrations that better define the situation. President Frum stated staff will come back with more information.

3 - Above Ground Fuel Tanks.

Director Poupard noted above ground fuel tanks have been prohibited in the past. Director Frangiamore noted it has been requested by the Township and by a Golf Course. Director Poupard explained the ACC stated that Diesel fuel is not very flammable and the local amendment should be relaxed. Having above ground tanks for gasoline is much more of a concern and the ACC favored having more restrictions.

President Frum commented it is easier to know if they are leaking when the tanks are above ground. Trustee Ciesla questioned who would pass the standards, and in response Director Frangiamore replied the State Fire Marshall. The Board noted they approved this amendment.

4 - Swimming Pool Code - Self Closing Covers.

Director Poupard stated if a resident obtains a self-closing cover, the base swimming pool code states a fence is not required. The ACC suggested keeping a fence, no matter what. Director Poupard noted a fence is presently not required with a hot tub or spa, if there is a cover. The Board agreed with still requiring a fence.

Director Poupard then discussed when the new building code would be effective. He stated there would be one more public comment period prior to adoption. The Village has traditionally provided a grace period of several months before the effective date. The Board agreed having a January 1, 2020 effective date makes sense.
Director Poupard explained staff is also suggesting requiring HVAC contractors to also obtain a license. We would create a category in the Municipal Code requiring a license if a unit is replaced, however repair work will not require a permit.

Trustee Ciesla questioned what is required of a plumber and Director Poupard responded that local license is not required, but proof of a state plumber’s license is necessary.

She then questioned why staff wants to require a permit for HVAC. Director Poupard explained it would give the Village the ability to revoke a license if poor work is done on a project. Trustee Ciesla questioned how many HVAC contractors a year work in the Village? In response Director Poupard stated maybe 40 total. This would plainly require the contractor to be more accountable. Trustee Hebl asked for an example of a HVAC job gone wrong. Director Poupard noted HVAC issues typically deal with rooftop equipment for larger commercial jobs. In response to a question about other permits and inspections, he noted water heaters and furnaces are the two most dangerous systems in your home. A lot of things can go wrong.

Director Poupard explained if a license is not obtained when there is a problem, the Village does not know who to have a follow-up discussion with. We would only know who the general contractor is, not the specialist performing the actual work. A majority of the Board was in favor.

Director Poupard also reviewed the Green Building Code incentives that are in the Municipal Code. He stated the Village is moving towards an approach where a certain reduction in permit fee is applied if specific extra green measures are incorporated into a design, e.g. a rain garden, higher insulation or bio-swales in parking lots. Perhaps the permit fee can be reduced by as much as 30 - 50%. Trustee Hebl stated she would like to see an opt-out, under certain circumstances, with outdoor drainage. Trustee Israel stated energy savings benefit the unit. Trustee Hebl suggested encouraging rain gardens.

Trustee Han questioned why more people are not doing this? He stated the regulations have a catch and he read the code language. If applicant pays 100% of the permit fee and gets a credit, whose budget does that effect?

Director Poupard stated the Village refers to it as a rebate, but actually the funds would end up coming from a line item in the budget in his department. He explained that having reduced fee up front would be much easier to administer and that if someone did not construct the green improvements they would be obligated to pay the additional fees prior to occupancy.

President Frum suggested it is more of an incentive to give the credit up front.
Director Poupard discussed one example he saw in Florida. One town provided a grading system with a, b, c, d and e incentive. They treated everyone the same. Presently we do not promote continued sustainability.

Staff will bring this back to the Board and also follow up on home sprinklers.

Village Manager Nahrstadt reminded the Board there would not be a Committee of the Whole meeting on August 13th.

5. **OTHER BUSINESS**

None

6. **CLOSED SESSION**

None

7. **ADJOURN**

Trustee Israel moved, seconded by Trustee Collison to adjourn the meeting at 7:24pm.

On voice vote, all were in favor.
MEMORANDUM
VILLAGE OF NORTHBOURK
DEVELOPMENT AND PLANNING SERVICES DEPARTMENT

TO: RICHARD A. NAHRSTADT, VILLAGE MANAGER
FROM: THOMAS POUPIARD, DPS DIRECTOR
DATE: July 23, 2019
SUBJECT: REVIEW OF ACC & ELECTRICAL COMMISSION RECOMMENDATIONS - LOCAL BUILDING CODE AMENDMENTS

The International Code Council (ICC) and the National Fire Protection Association (NFPA) issue new “model codes” for proper construction techniques every three years. The ICC issues a series of building codes focused on different types of construction specialties, while the NFPA issues the National Electrical Code and many standards for fire protection. The Village typically adopts a new set of building codes every other code cycle (every six years). The Village is presently using the 2011 NEC and 2012 set of model building codes with a number of local amendments.

When the Village migrated from the 2006 set of building codes to the 2012 code series and from the 2005 Electrical Code to the 2011 NEC, we significantly reduced the number of local amendments (or special Northbrook construction standards). The move to reduce the number of local amendments was possible because the “model codes” have improved significantly over time. The model codes have also recognized emerging technologies and construction materials. This is particularly true for the National Electrical Code and the building code standards that identify energy-saving technologies. The change in philosophy to reduce the number of local amendments has been welcomed by the construction industry and made the administration of local building codes much easier.

Over the past year, the Village Staff has been working with the Electrical Commission and the Architectural Control Commission to review the 2017 National Electrical Code and the 2018 set of model international building codes. On July 11, 2019, the Northbrook Architectural Control Commission completed their review of our building codes and unanimously recommended approval of the following codes and accompanying local amendments:

1. National Electrical Code (NEC) 2017 edition;
2. International Residential Code (IRC) 2018 edition;
5. International Mechanical Code (IMC) 2018 edition;
6. International Fuel & Gas Code (IFGC) 2018 edition; and

Included in the materials for the Committee of the Whole meeting is a set of slides used by staff to summarize some of the key discussion points during the July 11 ACC meeting. Attached you will also find drafts of each set of local building code amendments with margin notes briefly describing the changes that have been made.

The vast majority of the code amendments are quite technical and relate to “best practices” in our climate; however, there are several code amendments that involve policy issues that we want to make sure the Board of Trustees considers before they are adopted.

During the July 23, 2109 Committee of the Whole meeting, we would like to present the underlying rationale for a few noteworthy building code amendments. The next section of this report will highlight the amendments we would like to discuss with the Board. They are organized based on the corresponding model code.

**National Electrical Code (NEC) 2017 edition.**

The Electrical Commission worked with staff from the Fire and DPS Departments to formulate our local amendments to the 2017 National Electrical Code (NEC). As noted earlier, the Village is currently using the 2011 version of the NEC. There were only a few changes suggested to the current set of local amendments. Most are highly technical and deal with safety concerns. One local amendment that was formulated by the Electrical Commission and refined by the Architectural Control Commission is noteworthy. It pertains to making accommodations for electrical car charging systems in new single family homes and townhomes.

Recognizing that electrical vehicles are becoming increasingly popular, but are still used by only a small percentage of the public, the Electrical Commission recommended that new single family homes and townhomes be constructed with conduit to easily accommodate running the wires to accommodate a future charging station in the garage. One of the most expensive parts of retrofitting an existing home to accommodate a new charging station is the cost of running conduit through walls from the circuit panel to the garage. The proposed local amendment would have the electrical conduit installed during construction when it is relatively inexpensive to do so. To our knowledge, Northbrook is the first municipality in the United States to take this approach. The Village of Schaumburg is now considering adopting the same local amendment. Proposed local amendment number 5 in the 2017 NEC is listed below:

5. **210.52(G)(1) Garages** Add a new paragraph 210.52(G)(1)(a) to read as follows:

(a) **Conduit for EV Charging Equipment.** In new construction governed by the International Residential Code (IRC), a, a minimum of one ¾” (nominal trade size) metallic rigid, IMC or EMT conduit shall be installed from the electrical panel to a 4-11/16” deep electrical junction box located on the side wall of the garage in a location that will accommodate future electrical vehicle charging equipment. A blank cover shall be installed on the 4-11/16” junction box. The electrical panel from which conduit originates shall have provisions for adding the future 2 pole breaker and the availability to add at least a 60 amp load to the electrical panel.

**International Residential Code (IRC) 2018 edition.**

The International Residential CODE (IRC) establishes construction standards for single-family homes,
duplexes and most townhomes (up to three stories in height). The Village is currently using the 2012 IRC with local amendments. While there were not many changes suggested to our current set of local there are a few topics that we want to review with the Board of Trustees.

- **Sprinkler Requirements for single Family Homes Having Significant Building Additions.** The one topic that received the most attention during the Architectural Control Commission’s review of the building codes was when homes that are being enlarged should be required to have a fire sprinkler system. As most people are now aware, all new single family homes in the Village must have a fire sprinkler system installed. The base IRC has a specific exemption that stipulates that sprinklers are not required whenever an existing home receives a permit for an addition or alteration. The code language is listed below.

  R313.2 One- and two-family dwellings automatic fire sprinkler systems. An automatic residential fire sprinkler system shall be installed in one- and two-family dwellings.

  **Exception:** An automatic residential fire sprinkler system **shall not be required for additions or alterations to existing buildings** that are not already provided with an automatic residential sprinkler system.

  This exception in the base building code has allowed contractors to keep up only a few walls of a home and construct very large additions - and basically construct a new single family home - and avoid having to install a fire sprinkler system. We discussed this topic with the ACC on several occasions and they concurred that the current practice resulted in a *de facto* reward to those using inferior building techniques. During the July 11 ACC meeting, staff presented several policy options for the commission’s consideration:

  - **Option 1** - Maintain the existing exemption in the code as is and only require a sprinkler in situations where a determination is made that we have “new construction”.
  
  - **Option 2** - Amend the exception to stipulate that a sprinkler system would be required if the addition to an existing home exceeds 100% of the existing habitable floor area of the home - a 1,200 square foot home is expanded to 2,401 or more square feet.

  - **Option 3** - Amend the exception to stipulate that a sprinkler is required when the total amount of floor area that is “significantly altered or added on” exceeds 150% of the existing habitable floor area - a 1,200 square foot home increases to 2,100 square feet but 900 square feet (75%) is an addition and an additional 900 square feet in the existing space is “gutted” and improved.

After reviewing several examples of varying types of home additions, the ACC recommended “Option 3”; however, they were concerned that a typical ranch home that adds a second floor would require a sprinkler system. This could be a hardship for existing residents looking to add-on to their homes. The concern was that at least 50% of the existing first floor would be considered “altered”. **After discussing the topic in great detail, the ACC recommended using Option 3 with the total amount of addition and alteration changed from 150% to 166%**. Based on the direction from the ACC, amendment #27 to the IRC reads as follows:

27. **R313.2 Automatic Fire Sprinkler Systems Required for Major Renovations.** Amend the exception in Section R313.2 to read as follows:

  R313.2 One- and two-family dwellings automatic fire sprinkler systems. An automatic residential fire sprinkler system shall be installed in one- and two-family dwellings.
Exception: An automatic residential fire sprinkler system shall not be required for additions or alterations to existing buildings that are not already provided with an automatic residential sprinkler system, unless the amount of added and altered habitable floor area (excluding basement area) exceeds 166 percent of the habitable floor area (excluding basement area) of the existing dwelling, in which case an automatic residential sprinkler system shall be required. Such permits shall be classified as Major Renovation Permits.

Since the suggested local amendment represents a noteworthy policy change, we wanted to make sure the Board was aware of this amendment and the rationale behind it. We will explain the concept in greater detail to the Board on July 23.

Adopt this Appendix in its entirety. The 2018 International Residential Code includes a series of appendices that are optional for communities to adopt. A new Appendix T is included in the IRC that the staff and ACC believe the Village should adopt. Although Appendix T does not require solar systems to be installed for a building, it does require the space(s) for installing such systems, providing pathways for connections and requiring adequate structural capacity of roof systems to support solar systems. Thus, when new homes are built, it will be much easier to have solar roof systems installed at a later date.

**International Fire Code (IFC) 2018 edition**

As the name implies, the International Fire Code, establishes a wide range of life safety standards for buildings and properties. Few changes are proposed to the current set of local amendments, many of which outline the Village’s sprinkler standards for non-residential and multi-family construction. The one topic that we did discuss in detail with the Architectural Control Commission involved the current local amendment in the Fire Code dealing with above-ground fuel tanks.

The Fire Prevention Bureau felt that the current local amendment is overly restrictive, particularly as it relates to diesel fuel, which is not nearly as flammable as other types of fuels. They asked that the ACC consider the merits of changing the existing local amendment.

The ACC agreed with staff that requiring fuel tanks to be buried raises its own set of issues, including long-term problems with leaking underground tanks. The ACC recommended liberalizing the local amendments to allow more opportunities for diesel fuel tanks, but having more restrictive standards for other more flammable types of fuels. Diesel fuel is considered a “Class II” liquid in the NFPA. Class IB liquids include acetone, benzene, ethyl alcohol, gasoline, and isopropyl alcohol - which are much more flammable.

The proposed local amendment #52 to the 2018 IFC as recommended by the ACC would read as follows:

5704.2.9  **Above-ground tanks.** Above-ground storage of combustible liquids in tanks shall comply with Section 5704.2 and Sections 5704.2.9.1 through 5704.2.9.7.10. Above-ground storage of flammable and Class I liquid in tanks is prohibited, with the exception of gasoline. Above-ground storage of combustible and Class II or IIIA liquids in tanks is permitted only if the above-ground tank is located in compliance with Section 5704.2.9.6.1. The use of above-ground tanks to dispense fuel is prohibited, except that:

1. An above-ground tank may be used for the purpose of storing and dispensing Class II or IIIA liquids used to fuel the operation of an emergency generator system, provided
that:

a. the above-ground tank has a fuel storage capacity of not more than 2,000 gallons; and

b. the above-ground tank is located in compliance with Section 5704.2.9.6.1 and is located not less than 25 feet from any adjoining property line and not less than 10 feet from any building or structure; and

c. the above-ground tank is equipped with secondary containment in accordance with Section 5704.2 and Section 5704.2.9.6.4 that provides capacity in the amount of no less than 150 percent of the capacity of the above-ground tank.

2. An above-ground tank may be used for the purpose of storing and dispensing gasoline used to fuel the operation of equipment provided that:

a. the above-ground tank has a fuel storage capacity of not more than 500 gallons; and

b. the above-ground tank is located in compliance with section 5704.2.9.6.1 and is located not less than 300 feet from a residential property lot line, 100 feet from any adjoining property line and not less than 25 feet from any building or structure; and

c. the above-ground tank is equipped with secondary containment in accordance with Section 5704.2 and Section 5704.2.9.6.4 that provides capacity in the amount of no less than 150 percent of the capacity of the above-ground tank.

Fire Prevention Bureau staff will be present on July 23 to explain the details of this standard.


By adopting the 2012 ISPSC, the Village was able to eliminate an entire chapter of the Municipal Code that outlined our own unique construction standards for swimming pools. This was a very successful policy change that was particularly well-received by swimming pool contractors.

Few significant changes were made to the 2018 Swimming Pool and Spa Code; however, the model code does include a new standard that stipulates (Section 305.1) that, “[w]here … swimming pools are equipped with a powered safety cover that complies with ASTM F1346, the areas where those … pools are located shall not be required to comply with Sections 305.2 through 305.7 (Fencing).”

The prior versions of the ISPSC (and the prior Northbrook Municipal Code standard for pools) had a strict requirement that all swimming pools must be fenced. The ACC recommended deletion of the exception in the 2018 ISPSC so that all swimming pools would still have to be fenced, even if the pool was equipped with a power cover. The recommendation was based on safety concerns that a pool owner may still forget to close the pool when it is not in use, even if it is equipped with a power cover.

Effective Date for Codes.

We expect the Board may be able to adopt the new codes in late-August. We want the have a minimum 30-day public review period. Following the discussion by the Board on July 23rd, we would post the amendments online and also include notices in the front counter areas in DPS. We have traditionally allowed a phase-in period for people to know what codes to follow. We have also allowed people to choose to use the new codes if it is to their benefit in the “phase-in period”. The ACC agreed with the staff recommendation that if the Board adopts the new codes on August 27, that the delayed effective date would be January 1, 2020.
**Mechanical Contractor Licensing Requirement.**

The ACC also agreed with a staff recommendation that we amend the Municipal Code to require Mechanical/HVAC contractors to be licensed. They currently are not licensed by the Village, nor is there any state licensure. We surveyed nearby communities and found that a majority (but certainly not all) of the nearby communities license or register mechanical contractors (see attached table summarizing survey results).

**Pending Plumbing Code Amendment.**

We are currently working with the Illinois Department of Public Health (IDPH) to seek their approval to a very minor wording change to the Illinois Plumbing Code concerning the design of overhead sewer systems. The Village cannot unilaterally adopt any local amendments to the Plumbing Code without first having them approved by IDPH. We hope to have those approvals in place prior to the adoption of the other code amendments.

**“Green Building Incentives”.**

Now that the ACC has completed its review of the building and electrical codes, we will be shifting our focus to the “Green Building Initiatives” that are established in the Northbrook Municipal Code. The initiatives were adopted in 2008 and have not been used by many, as applicants have complained the requirements are too cumbersome. A copy of the current code section is attached.

We have been reviewing various ways in which the incentives in Chapter 6, Article XV of the Municipal Code can be amended so they are not solely reliant on obtaining LEED certification. If you do not use the LLED system, implemented by the US Green Building Council, you are ineligible for any incentives.

One approach we have discussed with the ACC is having a set percentage reduction in permit fees for utilizing certain construction techniques such as a certain size solar array or the use of bio-swales. We are also beginning to review the International Green Building Code (IGBC) to see if there is a benefit in adopting those standards along with the Green Building Incentives. Our goal is to have a set of recommendations completed by the ACC in the autumn, so these can be adopted by the Board by the end of 2019.

We are very thankful for the hard work by the Electrical Commission and ACC in helping us formulate these recommendations. I will be presenting this information to the Board on July 23, but will also have others from DPS and Fire present to help answer any technical questions.
Update on Procedures for Switching to Spray Foam Insulation During Construction
MEMORANDUM

To: Architectural Control Commission

From: Jackie Clawson, Building Official

Date: November 8, 2019

RE: Change to Spray Foam Insulation in Residential Projects

Previously we discussed with the ACC some of the issues with spray foam insulation being installed in residential projects during construction without having been first identified as such on the permit drawings. The matter was last discussed in January 208 (see attached minutes).

Typically insulation is generically identified on required energy diagrams in permit drawings, showing the locations and prescriptive R-values complying with the IECC. This prescriptive approach is easy to represent and a majority of applicants take this route.

Increasingly, a change to spray foam insulation will occur during construction, resulting in a number of issues requiring documentation, as the use of spray foam is combustible, and therefore carries more complex installation requirements per the International Residential Code.

Despite flammability concerns (when used in certain areas), the use of spray foam as an insulation product is highly desirable, and it’s our intent to identify the best approach to accommodate a safe and compliant installation.

We are trying to strike the proper balance between a thorough review of the necessary energy conservation and flammability documentation and the contractor’s desire to have a very fast turnaround time for these changes - often identified in the field during construction.

During the November 14 meeting we would like to update the ACC on progress we have made to try and streamline the process for the review and approval of this alternative means of insulation.
REScheck vs. REM/RATE

What are REScheck and REM/Rate?
A plan review is the process of us examining your blue prints and entering all necessary data (i.e. insulation, window, glass door values) from the plans and/or our Items Needed List into one of two modeling software programs for residential construction, REScheck or REM/Rate. This process allows us to generate a Compliance Report from either program; the report attached to the plans is one of the items city officials check for when the builder submits the plans for approval in order to obtain a permit.

What is the difference between the two?
REScheck was developed by the Department of Energy and allows for a general assessment of a homes energy efficiency in terms of its ceiling insulation, exterior walls, windows, and doors. Through the program’s UA (U-factor x Area) alternative option, values are entered for all ceilings, exterior walls, floors, windows and exterior doors. REScheck evaluates the data and generates an average score. It then compares the score with a model house that meets minimum code requirements and serves as a bench mark or starting point. The difference between the two scores is expressed as a percentage i.e. “9 percent better than code” REScheck leaves minimal wiggle room for builders to use any materials that do not meet the code requirements.

REM/Rate allows for a more detailed look at a project’s building elements than REScheck. REM/Rate can accept information about the ceilings, exterior walls, floors, windows and exterior doors, but it also gives builders credit for porch overhangs, roof and paint colors, the appliances being used, lighting fixtures, HVAC and water heating equipment, etc. Due to REM/Rate taking into account more detailed and accurate information about the building structure’s energy efficiency factors, the software generally shows a greater difference between the model/bench mark home and the real house’s energy efficiency. A home showing 9 percent better than code under REScheck could potentially score 25% better than code using REM/Rate. REM/Rate also generates an overall rating for the home known as a HERS/Index rating. Various loans and programs (such as VA loans and Energy Star Version 3) have HERS Index limits that cannot be exceeded if the home is going to demonstrate compliance with their requirements. Additionally, some jurisdictions are now, or soon will be, accepting a HERS Index of 65 or lower as another way to demonstrate IECC code compliance.

Which should I use?
The software program that will best meet each builder’s needs depends on several factors.

- Many cities are satisfied with a REScheck compliance report showing the home meets their city’s current code standards. In this situation, if you are planning on building according to the IECC’s prescriptive minimum requirements, REScheck will work just fine for you.

- However, some cities have written amendments requiring a home’s compliance report demonstrate that when the home is built it will be, “X% better than code.” In that situation, if the builder is trying to use certain building materials right at or possibly below the IECC’s minimum prescriptive requirements for the insulation, doors or windows, etc. REM/Rate will be the best option.

- If the builder is trying to meet a particular HERS Index rating for a specific type of loan, or program, or as an alternative method of code compliance, only REM/Rate will generate a HERS Index value.

- Still unsure which program to ask for? Just call us!
Fiberglass insulation is significantly cheaper than spray foam insulation, but it is also less effective, especially in extremely cold conditions. Used in roughly 85% of American homes, fiberglass insulation is the most common form of home insulation. Spray foam insulation has less market share but is increasing in popularity. Professional installation is required for spray foam insulation, but fiberglass insulation can often be installed by homeowners themselves.

### Comparison chart

<table>
<thead>
<tr>
<th></th>
<th>Fiberglass Insulation</th>
<th>Spray Foam Insulation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How it works</strong></td>
<td>Traps inside tiny glass fibers, slowing transfer of heat.</td>
<td>There are 2 Types of Spray Foam insulation, Open and Closed Cell. Open Cell is mainly used as an air barrier but closed cell is an Air, Moisture and Vapor barrier.</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>Around $0.40 per square foot</td>
<td>Around $0.90-$1.50 Per Board Foot for Closed Cell. 1 Board Foot is a 1ft by 1 ft square at 1 inch of thickness</td>
</tr>
<tr>
<td></td>
<td>Fiberglass Insulation</td>
<td>Spray Foam Insulation</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>Air leakage</td>
<td>Yes</td>
<td>No with Closed Cell. Yes with Open Cell though minimal</td>
</tr>
<tr>
<td>Installation</td>
<td>Sheets placed in wall</td>
<td>Sprayed by a professional</td>
</tr>
<tr>
<td>Energy efficiency</td>
<td>Less efficient</td>
<td>Substantially More efficient</td>
</tr>
<tr>
<td>Flammability</td>
<td>Potentially, due to kraft paper on batts.</td>
<td>Yes – need a barrier with fire rating, like drywall. However, most Closed Cell Spray Foams come with a fire retardant.</td>
</tr>
<tr>
<td>Extreme cold</td>
<td>Loses heat quickly</td>
<td>No difference in performance</td>
</tr>
<tr>
<td>R-value</td>
<td>2.2 per inch non aged R-value. Fiberglass losses R-value over its lifetime</td>
<td>Open Cell - 3.5 per inch of aged R-value. Closed Cell - 6 to 7 per inch of aged R-value. Spray Foam does not lose R-value over its lifetime</td>
</tr>
<tr>
<td>Lifetime</td>
<td>10-25yrs if the fiberglass stays dry</td>
<td>+80yrs</td>
</tr>
<tr>
<td>Benefits</td>
<td>Low cost insulation</td>
<td>- Stops air and moisture infiltration - Adds strength to the building structure - It is permanent and will not sag - Keeps dust and pollen out - Reduces capacity requirements, maintenance and wear of HVAC equipment</td>
</tr>
<tr>
<td>Sound Barrier Efficiency</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Added Structural Integrity</td>
<td>None</td>
<td>Yes. Closed Cell adds up to 250% Racking strength to your walls and roof</td>
</tr>
</tbody>
</table>

Contents: Fiberglass Insulation vs Spray Foam Insulation

1 How It Works
   1.1 Types of Spray Foam Insulation

2 Energy Efficiency of Spray Foam vs. Fiberglass
   2.1 R Value

3 Installation Process

3.1 How Spray Foam Insulation Is Installed
3.2 How Fiberglass Insulation Is Installed

4 Cost of Fiberglass vs. Spray Foam Insulation
5 Health Effects and Risks
6 References
How It Works

The transfer of heat is slowed down with fiberglass insulation because the glass fibers trap air bubbles. These bubbles create an insulating effect by slowing heat exchange between areas and surfaces.

Spray foam contains a polymer, such as polyurethane, and a foaming agent. After being sprayed, it expands to roughly 100 times its original volume and hardens into a solid. As a result, it is able to fill vacant air gaps, and will expand and contract in relation to the building.

Types of Spray Foam Insulation

The two types of spray foam insulation are open-cell and closed-cell. Each kind has its advantages and disadvantages, based on insulation needs and costs.

Open-cell foam means that the cells are broken and air fills the gaps inside the material. Open-cell foam is thus softer and less structurally stiff than closed-cell foams, where the cells form a cohesive structure. The closed-cells hold their shape as they are filled with gas, making them stronger to pressure and also creating a better insulator. If the foam will not be stressed by outside forces, doesn't need to conform to a solid shape, and the budget is limited, then open-cell foam is best. For areas that need higher insulation of air and water vapor, will have more exposed usage, require structural support or decoration, and the budget is higher, then closed-cell foam is a better option.

Whereas open-cell foam is limited in its insulation range, closed-cell foam can vary greatly in density and insulation factors. The density relates directly to insulation value and is measured by weighing one cubic foot (cu. ft.) of the foam material. Open-cell foam weighs between 0.4 and 0.5 lbs/cu. ft, with an R-value (insulation) factor of about 3.5 per inch. Closed-cell foam can be made with densities as high as 1.7 to 2.0 lbs./cu. ft. The higher density not only allows for it to be molded for decorative or light structural uses, it also provides R-values of about 6.0 per inch. For comparison, roofing applications have densities in the 2.8 to 3.0+ lb./cu. ft, range, so regular closed-cell foam is not really a load-bearing material, but it can reinforce and decorate as well as insulate. Some closed-cell polyurethane foams can reach a density of 30 lbs./cu. ft to 40 lbs./cu. ft., and are painted to simulate wood or marble.

Differences in cost are based not only on materials, but also on methods used for application. Open-cell foam can be easily applied and installed using a low-cost, water-based process. Open-cell foam also occupies more space per weight (i.e., it is less dense), so less material is needed to fill an area. Closed-cell foams are heavier, require the proper R-value blowing agents for application and are thus more expensive and
more difficult to install. The insulation gain of closed-cell vs. open-cell foam is not always cost-effective, so that factor must be taken into consideration when choosing spray foam insulators.

**Energy Efficiency of Spray Foam vs. Fiberglass**

The composition of fiberglass insulation does not stop air from passing through it. On average, more than 30% of heat or air conditioning escapes where fiberglass insulation is installed. If poorly installed, fiberglass can also leave spaces around fixtures, allowing even more heating or cooling to escape.

Spray foam insulation fills all spaces, preventing air from escaping. It acts as an air barrier. Like cellulose insulation, spray foam insulation is significantly more efficient than fiberglass and has a higher R-value.

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**R Value**

A product’s r-value is its resistance to heat flow. A higher R-value prevents more heat from escaping through the insulation. Homes generally try and reach an R-value of 38 with their insulation. The R-value of spray foam insulation is approximately 6 per inch so those using spray foam as their insulator will need about 6.3 inches of thickness to reach R-38. The R-value of fiberglass insulation is approximately 2.2 per inch so much thicker fiberglass insulation is required to achieve the same R-value of 38.
Installation Process

How Spray Foam Insulation Is Installed

Spray foam insulation is composed of two separate parts that are combined as they are sprayed. One barrel is isocyanate (the "A" side) and the other barrel is resin (the "B" side). One of the components in the "B" side barrel is the fire retardant. The components in this barrel need to be properly agitated before use so that the fire retardant mixes well with the entire resin. Each barrel is slowly warmed to about 770 °F before beginning application. Transfer pumps draw the product out of each barrel and move it to the proportioner, which controls the amount of product drawn from each barrel and heats the products to the appropriate spray temperature (usually around 150-160°F). A hose (that actually contains 3 hoses) runs from the proportioner to the spray foam gun. There is a mixing chamber in the gun head where the isocyanate and resin mix and are immediately sprayed and applied.

Spray foam insulation must always be installed by a professional. This is an overview of the installation process for spray foam insulation and this video demonstrates how professionals install spray foam insulation in the attic of a home.

How Fiberglass Insulation Is Installed

Fiberglass insulation comes in batts or rolls of varying thicknesses and lengths that must then be cut for installation. For the highest level of insulation, the fiberglass must be cut carefully so it can fit as tightly as possible around obstacles such as power sockets. This process is difficult for some installations and is time-consuming. Although for quick insulation, fiberglass can be easily installed without professional assistance, the most benefits will accrue if a professional does the job.

Fiberglass can irritate your throat and skin, so wear protective gear. Buy a two-strap mask rated for fiberglass insulation (3M No. 8210 is one example) and wear a hat, gloves, a long-sleeve shirt and goggles to keep fibers out of your eyes.[1]

See this video for advice on how to overcome 3 main problems in installing fiberglass insulation.

Cost of Fiberglass vs. Spray Foam Insulation
On the whole, spray foam insulation costs two to three times as much as fiberglass insulation. Fiberglass insulation costs around $0.40 per square foot. Spray foam can be significantly more expensive, but can lead to bigger savings on heating and cooling costs. It costs around $3 per square foot, with a thickness of 3 inches.

Given the complexity of the installation process for spray foam insulation, the cost to install it are also significantly higher than fiberglass.

Spray foam, however, lasts a lifetime and can be applied in nooks and crannies that are not suitable for fiberglass. With its higher energy efficiency and lower utility bills, the payback period for offsetting the higher cost of spray foam insulation is estimated at between 5 and 7 years for colder climates.[6]

**Health Effects and Risks**

Some of the main ingredients in spray foam are isocyanates. These chemical compounds are highly irritating to the eyes, lungs, and stomach, and contact with the foam can cause severe skin rashes and inflammation. This means that protective clothing, including gloves, goggles and a mask or respirator, must be worn when applying spray foam. An overexposure to isocyanates has been shown to cause asthma attacks in workers who are exposed to spray foam again. Long-term respiratory irritation could eventually lead to chemical bronchitis. Once cured, spray foam is inert and non-toxic. However, during the curing process, the foam emits a gas that can cause respiratory distress and blurred vision. If the spray foam components are not mixed in the proper proportions, the foam could emit this gas permanently, even after it has been cured.[5]

Fiberglass insulation contains glass wool fibers that are believed to be carcinogenic. Some fiberglass products warn of "possible cancer hazard by inhalation". Fiberglass irritates the eyes, skin and respiratory system. Potential symptoms include irritation of eyes, skin, nose, throat; dyspnea (breathing difficulty); sore throat, hoarseness, and cough.[4]

Protective gear is recommended when installing either type of insulation.

**References**

- wikipedia:Fiberglass insulation (glass wool)
- Wikipedia:Spray Foam Insulation
- Alternative Energy Systems
- Types of insulation materials
- When to use spray foam insulation
- Types of Insulation - Energy.gov

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**Related Comparisons**

- Cellulose Insulation vs Fiberglass Insulation
- Electric Heating vs Gas Heating
- Metal Roof vs Shingles
- Joist vs Truss
- Rotary Hammer vs Hammer Drill
- Drywall vs Sheetrock
ACC Commissioners Present (7):
Alan Schwall, Chairman
Robert Katz
Cliff Town
Chris Urbanczyk
David Menn
Lori Jordison
F. Dirk Heidbrink

Village Staff Present:
Tom Poupard, Director of Development & Planning Services
Michaela Kohlstedt, Deputy Director
Jackie Clawson, Building Official
Colleen Brunner, Recorder

Additional Present:
Selwyn Marcus, Owner of Village Green Business Center, LLC
Representative from South Water Signs
Representative from H.M. Witt & Co. Signs

Call to Order
Chairman Schwall called the meeting to order in the Terrace Room of Village Hall, 1225 Cedar Lane, at 5:30 p.m.

Roll Call
Roll was called. A quorum was present.

Review of Minutes
On a motion made and seconded, the minutes from the November 9, 2017 ACC meeting were unanimously approved as presented.

Public Comments Regarding Items Not on the Agenda - None

Level III Design Review (VGO District)
Deputy Director Kohlstedt presented a report for signage at 1314 and 2 signs at 1330 Shermer Rd. All signs are in compliance with the Zoning Code in terms of size and location.
1312 Shermer- @ Properties did remove one sign but is requesting 2 replacement illuminated signs for their second location on the Subject Property.

Two additional applicants also each requested approval for one wall sign a piece at 1330 Shermer Rd. one for Edward Jones and one for Peoples Protection Group. Both are requesting one (1) illuminated sign each. The total of all signs is compliant for that facade.

Member Town made a motion to approve all 3 businesses signs as submitted. Member Katz seconded the motion and all approved.

**Discussion of Challenges with Attics and Spray Foam Insulation**

Director Poupard stated that building permits are being submitted and approved showing the use of batt insulation, only to discover upon inspections that the contractor has decided to change to use spray foam insulation. This presents a potential code compliance problem, particularly in the attic areas. If the attic is going to be used for storage a fire barrier is required. The issue is what is considered storage? Often a 2nd furnace is put in that area, pull down stairs, etc. The possibility of altering the area after inspections without the correct barrier is a potential fire hazard. We want to be consistent in how we are applying the rules and are seeking feedback from the commission on where we are being reasonable or not. We are developing forms and handouts to call out this issue during the permit issuance step, but getting the contractors to understand and follow the guidelines can be a challenge.

Jackie Clawson explained that during the initial plan review staff tries to identify an attic with storage potential and if a protective barrier would be required. She would like to implement a new form as part of the application with strict guidelines to make contractors aware of the code and spray foam coating from the start. This is important because of the flammability of the spray insulation.

Members had the following comments:

- Heidbrink- He doesn’t feel the Village is being unreasonable with this request.
- Town- the Village is making a stand and following the code.
- Schwall- The client should understand the safety value of having a fire barrier. He doesn’t feel the Village is off base but curious what other towns are doing.

Director Poupard stated the form may be a single page similar to the whole house ventilation document previously discussed with the committee.

**New Single Family Home Elevations:**

a) 686 Driftwood Lane- (R-1 District)-OKW Architects
b) 505 Helen- (R-3 District) –Thomas Architects
c) 4055 Ridgeland Lane- (R-3 District)- Ramon Contreras, architect
Member Menn made a motion to approve all single family elevations as submitted. Member Katz seconded the motion and all approved.

**New Business**

None

**Old Business**

None

**Adjourn**

There being no further business, on a motion was made and seconded to adjourn the meeting. On a voice vote, the motion was unanimously carried and the meeting adjourned at 6:15 pm.

Respectfully submitted,

Colleen Brunner, Recorder
Sustainability Checklist Discussion
If time permits During the November 14, 2019 ACC meeting, we would like to update the commission on our efforts to develop a sustainable development checklist.

Member Albrecht furnished staff with some of the information used by the City of Chicago with their sustainable development program. A copy of that information is attached.

We are also supplying the Commission with a sustainable development guide prepared by the EPA, which we forwarded to the Board of Trustees as part of the packet of information to be used to evaluate the proposed redevelopment of Green Acres Country Club. The Board will be conducting their preliminary review of that application on Tuesday, November 12, 2019.

While we have not had time to finalize the checklist – the staff workload has been particularly heavy this year – we do want to complete the task of having a checklist and incorporating this into our green building amendments.

We are also working on a report that summarizes progress made by our department to meet the goals set forth in the Greenest Region Compact 2 (GRC2) that the Village has endorsed. We will also provide an update on where we stand with completing our SolSmart certification.
Building Healthy, Smart and Green

The City of Chicago has adopted The Chicago Standard, a new set of construction standards for public buildings. The Chicago Standard was developed to guide the design, construction and renovation of municipal facilities in a manner that provides healthier indoor environments, reduces operating costs and conserves energy and resources. It also includes provisions for outfitting, operating and maintaining those facilities. The Chicago Standard takes advantage of new building technologies and practices to enhance the well-being and quality of life of everyone working in and using these buildings, as well as the neighborhoods in which they’re located.

The Chicago Standard is derived from the Leadership in Energy and Environmental Design (LEED™) Green Building Rating System developed by the U.S. Green Building Council (USGBC), a nonprofit coalition representing all segments of the building industry. The LEED rating system is the most widely used and accepted standard for green building in the United States. It also is a certification tool. Points are awarded by the USGBC to buildings that incorporate the design and construction practices and technologies listed in LEED. By accumulating points, a building can achieve a rating of LEED Certified, Silver, Gold or Platinum.

Although originally developed for use in the City of Chicago’s municipal facilities, The Chicago Standard can be used as a guide for any construction or renovation project, public or private. All buildings that adhere to The Chicago Standard will be eligible for the LEED Certified rating. Buildings that incorporate additional LEED practices not found in The Chicago Standard (but listed as alternate points at the end of it) may be eligible for a LEED Silver, Gold or Platinum rating. For more information about the LEED practices and technologies that make up The Chicago Standard, visit the U.S. Green Building Council’s web site at www.usgbc.org.

City of Chicago
Richard M. Daley, Mayor
The Chicago Standard consists of 46 practices and technologies from the LEED rating system that are reasonable and appropriate for the design, construction, renovation and operation of buildings in Chicago. As in LEED, these practices and technologies are organized in six categories:

**Sustainable Sites**
Practices for sustainable site development include selecting sites that are not environmentally sensitive; designing the building with a minimal footprint to minimize site disruption; designing the site to maintain natural stormwater flows by promoting infiltration; using vegetated surfaces and open-grid paving or high-reflecting materials to reduce heat absorption; and selecting a site and providing amenities to encourage occupants’ use of alternative modes of transportation.

**Water Efficiency**
Strategies for maximizing water efficiency within a building include using innovative technologies such as ultra low-flow fixtures and occupant sensors, and reusing stormwater and greywater for non-potable applications such as toilet and urinal flushing, mechanical systems, irrigation, and custodial uses.

**Energy & Atmosphere**
Practices for enhancing energy efficiency include engaging a commissioning authority and adopting a commissioning plan to ensure that building systems operate as intended; designing the building envelope and systems to maximize energy performance; and providing at least 90 percent of the building’s electricity from renewable energy technologies on-site or off-site. Practices for reducing ozone depletion include installing heating, ventilation, air conditioning, and refrigeration equipment that uses no chlorofluorocarbons (CFCs) or hydrochlorofluorocarbons (HCFCs).

**Materials & Resources**
Strategies for conserving resources include reusing existing buildings; establishing goals for landfill diversion and adopting a construction waste management plan to achieve those goals; using regionally-produced materials and materials with recycled content; and installing Forest Stewardship Council-certified wood-based materials and products.

**Indoor Environmental Quality**
Practices that improve indoor environmental quality include developing and implementing an Indoor Air Quality (IAQ) Management Plan for the construction and pre-occupancy phases of the building; specifying low-VOC materials and products in construction documents; and designing the building to maximize interior daylighting and views.

**Innovation & Design Process**
Practices that reflect innovation in design—such as those that substantially exceed an energy performance or water efficiency level specified by LEED—may be awarded additional points by the USGBC.

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**CONSTRUCTION AND RENOVATION**
The construction and renovation standards listed below are from the LEED Green Building Rating System for New Construction & Major Renovations, Version 2.1, dated November 2002. Each standard is labeled either a “Prerequisite” or a “Credit.” Prerequisites, such as Sustainable Sites/Erosion & Sedimentation Control, are required by The Chicago Standard. Credits, such as Sustainable Sites/Site Selection, are worth one point each, except where otherwise indicated; a total of 26 construction and renovation points is required by The Chicago Standard. Alternate Credits, listed at the end of this document, may be substituted for those listed below. Alternate Credits also can be used to supplement the requirements of The Chicago Standard, enabling a building to qualify for a LEED Silver, Gold or Platinum rating. Design teams are encouraged to use the Alternate Credits in this way to achieve the highest possible LEED rating.

**SUSTAINABLE SITES**
- Erosion & Sedimentation Control (LEED Prerequisite 1)
- Site Selection (LEED Credit 1)
- Alternative Transportation: Public Transportation Access (LEED Credit 4.1)
- Alternative Transportation: Bicycle Storage & Changing Rooms (LEED Credit 4.2)
- Alternative Transportation: Parking Capacity (LEED Credit 4.4)
- Stormwater Management: Rate and Quantity (LEED Credit 6.1)
- Heat Island Effect: Non-Roof (LEED Credit 7.1)
- Light Pollution Reduction (LEED Credit 8)

**WATER EFFICIENCY**
- Water Use Reduction: 20% Reduction (LEED Credit 3.1)

**ENERGY & ATMOSPHERE**
- Fundamental Building Systems Commissioning (LEED Prerequisite 1)
- Minimum Energy Performance (LEED Prerequisite 2)
- CFC Reduction in HVAC&R Equipment (LEED Prerequisite 3)
- Optimize Energy Performance: 20% New Bldgs./10% Existing Bldgs. (LEED Credit 1.1, worth 2 points)
- Additional Commissioning (LEED Credit 3)
- Ozone Protection (LEED Credit 4)
- Measurement and Verification (LEED Credit 5)
- Green Power (LEED Credit 6)

Detailed information about the requirements of these Prerequisites and Credits can be found at www.leedbuilding.org.
INDOOR ENVIRONMENTAL QUALITY

- Minimum IAQ Performance (LEED Prerequisite 1)
- Environmental Tobacco Smoke Control (LEED Prerequisite 2)
- Carbon Dioxide Monitoring (LEED Credit 1)
- Construction IAQ Management Plan: During Construction (LEED Credit 3.1)
- Construction IAQ Management Plan: Before Occupancy (LEED Credit 3.2)
- Low-Emitting Materials: Adhesives & Sealants (LEED Credit 4.1)
- Low-Emitting Materials: Paints and Coatings (LEED Credit 4.2)
- Low-Emitting Materials: Carpet (LEED Credit 4.3)
- Low-Emitting Materials: Composite Wood (LEED Credit 4.4)
- Indoor Chemical & Pollutant Source Control (LEED Credit 5)
- Thermal Comfort: Compliance with ASHRAE 55-1992 (LEED Credit 7.1)
- Daylight & Views: Daylight 75% of Spaces (LEED Credit 8.1)
- Daylight & Views: Views for 90% of Spaces (LEED Credit 8.2)

MATERIALS & RESOURCES

- Storage & Collection of Recyclables (LEED Prerequisite 1)
- Building Reuse: Maintain 75% of Existing Walls, Floors and Roof (LEED Credit 1.1)
- Construction Waste Management: Divert 50% from Landfill (LEED Credit 2.1)
- Recycled Content: 5% (post-consumer + 1/2 post-industrial) (LEED Credit 4.1)
- Regional Materials: 20% Manufactured Regionally (LEED Credit 5.1)
- Certified Wood (LEED Credit 7)

INNOVATION & DESIGN PROCESS

Innovation in Design (LEED Credits 1.1 and 1.2)
LEED Accredited Professional (LEED Credit 2.1)

FURNITURE, FIXTURES & EQUIPMENT

The furniture, fixtures and equipment Credits listed below are from the pilot version of the LEED Rating System for Commercial Interiors, dated July 2002. These Credits set energy efficiency requirements for equipment and appliances, and recycled content and emissions requirements for furniture and furnishings. Achieving these Credits will not result in any additional LEED certification, but is good practice for any type of building. Detailed information about the Credits can be found at www.leedbuilding.org.

ENERGY & ATMOSPHERE

Optimize Energy Performance: Equipment & Appliances (LEED Credit 1.4)

MATERIALS AND RESOURCES

Recycled Content: Use 5% post-consumer or 10% post-consumer + post-industrial (LEED Credit 4.1)

OPERATION AND MAINTENANCE

The operation and maintenance Credits listed below are from the pilot version of the LEED Rating System for Existing Buildings, dated January 2002. Achieving these Credits will not result in any additional LEED certification, but is good practice for any type of building. Detailed information about the Credits can be found at www.leedbuilding.org.

SUSTAINABLE SITES

- Green Site and Building Exterior Management to Reduce Impact on Local Environments (LEED Credit 9.1)
- Low Impact Site and Building Exterior Chemical/Fertilizer/Pest Management Program (LEED Credit 9.2)

ENERGY & ATMOSPHERE

- Continuous Commissioning and Maintenance (LEED Credit 3)

INDOOR ENVIRONMENTAL QUALITY

Low-Emitting Materials: Furniture and Furnishings (LEED Credit 4.5)

INDOOR ENVIRONMENTAL QUALITY

- Green Housekeeping (LEED Credit 5)
ALTERNATE CREDITS

The Credits listed below are from the LEED Green Building Rating System for New Construction & Major Renovations, Version 2.1, dated November 2002. These Credits are not specified in The Chicago Standard; however, they should be reviewed for applicability on a project-by-project basis and used as replacement points in the event that any points from The Chicago Standard are not achievable. Earning points for some or all of the Credits below, in addition to meeting the requirements of The Chicago Standard, may make a building eligible for a LEED Silver, Gold or Platinum rating. Design teams are encouraged to use the Alternate Credits in this way to achieve the highest possible LEED rating. Detailed information about requirements of the Credits can be found at www.leadbuilding.org.

SUSTAINABLE SITES
- Development Density (LEED Credit 2)
- Brownfield Redevelopment (LEED Credit 3)
- Alternative Transportation: Alternative Fuel Vehicles (LEED Credit 4.3)
- Reduced Site Disturbance: Protect or Restore Open Space (LEED Credit 5.1)
- Reduced Site Disturbance: Development Footprint (LEED Credit 5.2)
- Stormwater Management: Treatment (LEED Credit 6.2)

WATER EFFICIENCY
- Water Efficient Landscaping: Reduce by 50% (LEED Credit 1.1)
- Water Efficient Landscaping: No Potable Use or No Irrigation (LEED Credit 1.2)
- Innovative Wastewater Technologies (LEED Credit 2)
- Water Use Reduction: 30% Reduction (LEED Credit 3.2)

ENERGY & ATMOSPHERE
- Optimize Energy Performance (LEED Credits 1.1 - 1.9)
- Renewable Energy: 5% (LEED Credit 2.1)
- Renewable Energy: 10% (LEED Credit 2.2)
- Renewable Energy: 20% (LEED Credit 2.3)

MATERIALS & RESOURCES
- Building Reuse: Maintain 100% of Existing Walls, Floors and Roof (LEED Credit 1.2)
- Building Reuse: Maintain 100% of Shell/Structure & 50% of Non-Shell/Non-Structure (LEED Credit 1.3)
- Construction Waste Management: Divert 75% from Landfill (LEED Credit 2.2)
- Resource Reuse: 5% (LEED Credit 3.1)
- Resource Reuse: 10% (LEED Credit 3.2)
- Recycled Content: 10% (post-consumer + 1/2 post-industrial) (LEED Credit 4.2)
- Regional Materials: 20% Extracted Regionally (LEED Credit 5.2)
- Rapidly Renewable Materials (LEED Credit 6.2)

INDOOR ENVIRONMENTAL QUALITY
- Ventilation Effectiveness (LEED Credit 2)
- Controllability of Systems: Perimeter Spaces (LEED Credit 6.1)
- Controllability of Systems: Non-Perimeter Spaces (LEED Credit 6.2)
- Thermal Comfort: Permanent Monitoring System (LEED Credit 7.2)

INNOVATION & DESIGN PROCESS
- Innovation in Design (LEED Credits 1.3 and 1.4)

City of Chicago
Richard M. Daley, Mayor
### Sustainable Sites

**Possible Points:** 26

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<td>Credit 4.3</td>
<td>Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles</td>
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<td>Site Development—Protect or Restore Habitat</td>
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### Water Efficiency

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Notes:

Village of Northbrook Green Building checklist / options 2 of 4
## Materials and Resources

**Possible Points:** 14

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<td>Reuse 95%</td>
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<td>Building Reuse—Maintain 50% of Interior Non-Structural Elements</td>
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**Notes:**
### Indoor Environmental Quality

**Possible Points:** 15

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### Innovation and Design Process

**Possible Points:** 6

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### Regional Priority Credits

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### Total

**Possible Points:** 110

Certified 40 to 49 points  Silver 50 to 59 points  Gold 60 to 79 points  Platinum 80 to 110
INTRODUCTION

According to the U.S. Census Bureau, population in the United States is projected to grow from 305 million in 2009 to 439 million people in 2050, and an estimated 89 million homes and 190 billion square feet of new offices, institutions, stores, and other non-residential buildings will be built. That means that approximately two-thirds of total development on the ground in 2050 will have been built between now and then, which creates great opportunities and responsibilities to develop in a manner that addresses the resiliency of our communities to respond to the impacts of a changing climate and resource demand and production equitably and sustainably.1 This major increase in population and development presents several critical opportunities for communities, regions, and states to grow smarter, invest in existing communities and infrastructure, and green their existing and future building stock. However, without a coordinated local, regional, and national commitment to green and sustainable development and infrastructure practices to support transit-oriented development in smart locations, costs associated with energy consumption and demand, natural resource and open space depletion, as well as greenhouse gas emissions will continue to escalate at unprecedented rates.

Many communities and regions around the country are looking for ways to grow smarter that use less land and energy; provide safe,

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affordable housing options for people of all incomes and ages, and support transportation options such as walking, biking, and public transit. A recent study suggests that increasing numbers of Americans are seeking to live in locations that offer walkability, more transportation choices, and a mix of housing, retail, jobs, and neighborhood services.²

Investing in existing buildings, neighborhoods, and infrastructure that supports walkable communities connected to transit, can increase economic competitiveness for communities and regions. As we plan for the future of communities, the economics of development will need to consider the fact that many Americans currently cannot afford to live near where they work, and are spending excessive amounts of time and their limited incomes on transportation, primarily owning and driving cars. In addition, homes that are not energy or water efficient also translate to more money spent on high energy and water bills. A comprehensive planning approach that integrates the location of development with neighborhood and building design to create walkable, transit-served neighborhoods will mean that households with varying income levels will have access to more jobs in the region because they do not need a car, and businesses will have access to more workers.

Smart growth and green building are also critical if this country is committed to reducing its impact on global climate change. Combined, buildings and transportation currently make up about 71 percent of the country’s greenhouse gas emissions.³ By investing in our communities and regions with homes that are closer to jobs, retail, civic centers, and neighborhood services, and by creating walkable neighborhoods, we will help to reduce the amount of driving and the greenhouse gas emissions that result. Making our buildings and infrastructure more energy efficient further contributes to these reductions. Several strategies to achieve energy savings and greenhouse gas emissions reductions are proposed in this publication.

A SUSTAINABLE APPROACH TO HOUSING AND DEVELOPMENT

Green building strategies create more energy efficient homes, which directly translates into significant savings in housing costs. However, a comprehensive planning and policy approach that identifies smart locations for development, design of mixed-use, walkable neighborhoods, and green building strategies will have the broadest impact on creating economically viable and sustainable development patterns in our country. According to the U.S. Department of Housing and Urban Development (HUD), “the average American household now spends 34 percent of their annual income on housing and 18 percent on transportation – the combined total of 52 percent of their budgets is wrapped up in these two largest expenses”. While this country has experienced lower housing costs in suburban and rural locations, transportation costs are higher, “and the combination of housing and transportation averages 57 percent for working families in the metropolitan area”. The study cited by HUD, also found that “households in a centrally located neighborhood, with access to mass transit, only spent 34 percent of their income on the same costs”.⁴ With nearly 50 percent of people living in rural places within the bounds of metropolitan statistical areas, an integrated planning approach that spaces jurisdictional boundaries is needed.⁵

Successfully addressing the challenges and opportunities of growing smarter and building greener will require that communities collaborate with each other; as well as with regional, state, and federal agencies and organizations. The

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infrastructure and economic stability of our communities are tied to what happens at the regional and state levels, and vice versa. For example, providing a regional public transit system is a critical element of the regional infrastructure system that requires coordination between local municipalities, regional authorities, and state and federal agencies. Making sure that these decisions yield benefits for households—in the form of greater choice, lower combined housing and transportation costs, and healthier communities—also strengthens local economies. To accomplish these multiple outcomes, agencies must collaborate to efficiently share information and resources and to appropriately target programs, policies, and resources.

In Connecticut, the Capitol Region Council of Governments (CRCOG) partnered with the U.S. Environmental Protection Agency (EPA) to address these challenges—many of which are shared by communities and regions around the country. CRCOG collaborated with EPA’s Smart Growth Program to identify tools and strategies for implementing a state affordable housing program, HOMEConnecticut, to grow smarter, ensure healthy and affordable housing, and support long-term economic competitiveness at the local and regional levels. The EPA and CRCOG hired a team of experts, which included urban designers from Wallace Roberts & Todd and real estate planning and development advisors from Jonathan Rose Companies. The guidelines in this document are a result of that collaboration and will help guide development in the 29 urban, suburban, and rural municipalities that make up the Connecticut Capitol Region.

These guidelines were developed for communities in Connecticut and around the country striving to get development and future growth that result in stronger neighborhoods, protected open space and watersheds, and healthier and more affordable homes. The guidelines are also applied to site-level conceptual plans for development that are featured in a companion report, Together We Can Grow Better: Smart Growth for a Sustainable Region. That report analyzes four types of development that represent many of the challenges and opportunities faced by communities:

- Infill redevelopment in an existing residential neighborhood;
- Greyfield redevelopment of a dead shopping center in a retail corridor;
- Infill development in a functioning but underused shopping center; and
- Development in a rural context adjacent to a village center.

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6 Authorized in 2007, the HOMEConnecticut program (Public Act 07-4) creates incentives for municipalities to establish land use regulations that allow higher density residential development with affordable housing requirements. The legislation authorized $4 million for technical assistance and planning grants to towns, non-profit developers, housing assistance organizations, and regional planning agencies and for zoning and building permit incentive payments.
OVERVIEW & PURPOSE OF THE GUIDELINES FOR SUSTAINABLE DESIGN & DEVELOPMENT

These guidelines can help individuals, organizations, and agencies involved in the planning, design, and development of homes, neighborhoods, and communities. They are intended mainly for local government officials who are at the forefront of making decisions on land use, site and neighborhood design, housing, green building, development agreements, and public-private partnerships. Municipal planners, engineers, commissioners, council members, and others must grapple with making the right decisions on projects of all sizes as they strive to make their communities more livable and sustainable. These guidelines can provide a framework to help these local decision-makers guide development, preserve open space, provide housing that is affordable and energy efficient, and create neighborhoods that are enjoyable and walkable.

These guidelines are also a resource for regional and state officials responsible for the allocation of state and federal resources. Funding for regional infrastructure—roads, transit, sewers, water, etc.—is usually allocated at the state level but has a significant impact on the way regions and communities grow. These guidelines demonstrate the connections between infrastructure investments and land use and development decisions and can help identify projects, features of projects, or broader areas that warrant more targeted state investment.
The guidelines are also for designers, developers, advocates, and builders of attractive buildings and neighborhoods, as well as those who are interested in developing homes and neighborhoods that respond to changing demographics and market demands. They offer important considerations on how to generate long-lasting value from land use and development decisions, including location, orientation and layout, composition and character, and green building materials and design.

Finally, these guidelines are intended to help residents who want to more effectively participate in the development of their neighborhoods and towns. This document provides a framework for them to engage with the local government and developers in siting, planning, designing, and developing high-quality projects that create great places.

GUIDELINES VERSUS CRITERIA

The guidelines were developed with the specific intent of providing strategies for decision-makers and practitioners involved in policy-making, planning, and development of our buildings, neighborhoods, and communities. They are not intended to be prescriptive or to offer uniform, rigid metrics or benchmarks, but rather to provide a comprehensive overview of how to approach equitable, sustainable neighborhood building.

These guidelines differ from, but complement, other certification programs that contain comprehensive criteria to achieve a certain standard of sustainability. Certification programs such as the Enterprise Green Communities, the U.S. Department of Energy and EPA’s ENERGY STAR, and the U.S. Green Building Council’s LEED certification systems (USGBC LEED) include specific requirements that the developer or homebuilder must meet in order to qualify for certification. These programs provide standards that agencies, individuals, and organizations can use to establish benchmarks and measure outcomes. They have also helped to popularize green building and design not only in the real estate and development industries, but also with residents, property owners and business tenants. While some programs focus on green homes or developments (such as ENERGY STAR, USGBC LEED-Homes, and the National Association of Home Builders Green Building Program), other programs (such as Green Communities and USGBC LEED-Neighborhood Development) emphasize the creation of green neighborhoods. (See Resources – Certification Programs for access to further information).

The ways in which communities use these programs vary widely. Some local and state governments have begun to require that projects meet green certification thresholds as part of a policy strategy to reduce greenhouse gas emissions. Other jurisdictions have incorporated elements of these green programs into their land use ordinances and building codes. The guidelines in this document provide a framework for the basic considerations for mixed-income, mixed-use, sustainable development. This publication also includes a list of resources that illustrate how the design guidelines could be incorporated into municipal land use regulations.

HOW TO USE THE GUIDELINES

The guidelines offer strategies that are appropriate for each scale of development—region, neighborhood, and building. Regional strategies establish the foundation for determining highest and best land use patterns that achieve better environmental and economic benefits. Neighborhood strategies lay the groundwork for livability, equity, good design, and marketability. Building strategies ensure that structures include green, energy-efficient design that reduces costs and improves the quality and durability of the built environment.
Site Location: The site location criteria can be used as a checklist for prospective development sites. They provide focused guidance for the most critical decisions that planners and policymakers can make to help reduce the impacts of development patterns on climate change, natural resources and ecological systems, reduce household costs and living expenses, and more efficiently use limited public resources to build regional infrastructure.

Neighborhood Plan: The neighborhood planning guidelines are more detailed, matching the scale of decisions that can be made at the block and neighborhood scale to create livable, equitable, and diverse communities. The guidelines include a list of strategies that could be considered for each project. They may not all apply, but they will add beauty and market value to projects, as well as enhance and preserve environmental features that create a sense of place.

Design and Construction: The design and construction guidelines are the most detailed. They focus on the building and site infrastructure-scale design decisions and strategies that can help reduce energy and water consumption, improve air quality, and create green infrastructure systems. Implementation of the strategies will vary depending on site conditions, availability of materials, capacity of local designers and builders, and other reasons. However, all the strategies should be considered as a menu of opportunities to create high-performance buildings in well-designed neighborhoods in smart locations.

Community participation in these issues is critical and should be integrated from the start into all development and land use planning and policy activities at the regional and local levels. These guidelines will provide residents with tools to identify and advocate for smart growth projects in their region, town, or city so they can more effectively participate in the planning process.

The economic and quality of life advantages communities gain from using smart growth and green building strategies are increasingly evident. As the market demand for energy-efficient homes and more affordable, sustainable neighborhoods increases, the capacity of local builders, designers, and suppliers will grow to meet that demand. The result will be well-designed communities that contribute to a stronger local economy, healthier residents, and a more environmentally sound approach to growth.
PROSPEROUS, SMART GROWTH LOCATIONS

Planning at the regional scale is the first critical step in creating livable communities. Locating development on underused, vacant, abandoned, or contaminated land in existing towns and cities reduces development pressure on rural or prime agricultural lands. These sites, typically infill sites or parcels adjacent to existing development, are often the cornerstones catalyzing further private investment in other underused properties nearby.

The benefits of this approach are many. For example, revitalizing neighborhoods and downtown districts strengthens the municipal tax base and prods communities to improve existing infrastructure. A regional analysis of development opportunities highlights new ways to increase accessibility to employment centers, reduce the time and energy residents spend commuting, and improve air and water quality. Complementary land preservation and conservation strategies at the regional scale identify vulnerable lands and help protect them from development, which focuses local and regional market forces on existing neighborhoods. Combining revitalization strategies with land preservation policies work together to strengthen the vitality and economic viability of mixed-use town centers and neighborhoods.

Local governments, planners, developers, and others who are involved in selecting and approving
sites for future development make their decisions based on many considerations. The guidelines on the following pages can be the foundation upon which to base location decisions for residential, commercial, mixed-use, or other development to achieve long-term economic and sustainable development objectives. Key regional strategies for locating development and making land-use policy are:

- Natural Resources Preservation
- Environmentally Sensitive Areas Protection
- Existing Development and Infrastructure Connections
- Transportation and Transit Systems Access
- Community-Oriented Services Proximity

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THE LINK BETWEEN VEHICLE MILES TRAVELED (VMT) AND CLIMATE CHANGE

Transportation accounts for 1/3 of CO2 emissions in the United States. Transportation related CO2 reduction efforts can be understood as a three-legged stool. The first leg is fuel efficiency, the second leg is developing cleaner, lower carbon fuels, and the third leg is the reduction of vehicle miles traveled (VMT).

To date, most policy attention has been paid to the first two legs of the stool, the gains of which have been canceled out by the additional VMT growth attributed to ongoing conventional development patterns. If current development patterns do not change, VMT in the United States will experience a rise of 48% by 2030 and 102% by 2050. By creating walkable compact communities connected to local and regional transit, Smart Growth development can effectively slow the growth in VMT by significantly reducing the need to drive.

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1 “Growing Cooler: The Evidence on Urban Development and Climate Change” ULI, Washington DC, 2008
2 ibid
# Prosperous Smart Growth Locations

## Objectives

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Guidelines</th>
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<tbody>
<tr>
<td>Natural Resources Preservation</td>
<td>Locate the development on a site that does not have:  - Wetlands, water bodies or land within 100 feet of these areas  - Prime agricultural soils  - Unique or prime forest soils  - Threatened or endangered species habitat  - Aquifer recharge areas</td>
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</table>

## Environmentally Sensitive Areas Protection

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Guidelines</th>
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<tbody>
<tr>
<td>Protect environmentally sensitive areas</td>
<td>Locate the development on land that does not have:  - Steep slopes greater than 15%  - 100-year floodplains  - Highly erodible soils</td>
</tr>
<tr>
<td>Enhance and protect the ecology of natural systems</td>
<td>Establish a mandatory no-development buffer at wetlands, floodplains, lakes, rivers, and estuaries</td>
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</table>

## Existing Development & Infrastructure Connections

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Guidelines</th>
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</thead>
<tbody>
<tr>
<td>Capitalize on existing infrastructure</td>
<td>Locate the development on a site that has access to existing roads, water, sewers and other infrastructure and is within or contiguous to existing development</td>
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<tr>
<td>Redevelop and restore value of contaminated or under-utilized land</td>
<td>To the greatest extent possible, locate the project on a greyfield (underused or abandoned site), brownfield (underused or abandoned site with real or perceived environmental contamination), or other adaptive reuse/infill site</td>
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<tr>
<td>Minimize reliance on private septic systems</td>
<td>Discourage development on sites where private septic systems will be required, both because of the costs of maintenance and typical system failures, and because of the large lot size required to service the systems</td>
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## Transportation and Transit Systems Access

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<th>Objectives</th>
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<tr>
<td>Encourage transit and other alternatives to single occupancy cars, reduce total congestion, vehicle miles traveled, household transportation costs, and greenhouse gas emissions</td>
<td>Locate the development on a site that is served by or within walking distance of public transit or other alternative transportation, such as:  - Bus  - Train (light rail, heavy rail, tram)  - Ferry  - Bike lanes and designated bike routes  - Car share</td>
</tr>
</tbody>
</table>
## PROSPEROUS SMART GROWTH LOCATIONS

### OBJECTIVES

- Support community health by encouraging walking and biking and reducing driving

### GUIDELINES

- Locate the development on a site that is served by or is within 15 minutes walking distance of community-oriented services, such as:
  - Grocery store
  - Convenience store
  - Civic, community and educational facilities
  - Cultural and entertainment facilities
  - Child care
  - Job centers
  - Health clinic (medical or dental)
  - Post office
  - Pharmacy
  - Laundry/ dry cleaner
  - Police or fire station
  - Place of worship
  - Public park and recreational facility
NEIGHBORHOOD PLAN - PLACEMAKING

Desirable neighborhoods that offer a good quality of life and maintain lasting value for residents are not only located in convenient areas (see previous section) but also include well-designed buildings, streets, and infrastructure. Good neighborhoods are sustainable and maintain enduring value for their inhabitants. They provide good quality housing opportunities for people at all stages of life, from young to old, and with different income levels. Good neighborhoods are memorable and have clear, identifiable boundaries, connections to surrounding places, parks and civic spaces, a diversity of uses and housing types, and create a cohesive sense of place.

These neighborhood-scale guidelines contribute to creating walkable neighborhoods, pedestrian friendly streets, and thriving, diverse, healthy communities. There are exciting opportunities within these guidelines to be creative. Green design and development strategies, such as those listed in this document, can be used to create neighborhoods that are environmentally sensitive and vibrant, attractive places. For example, trees along streets are aesthetically pleasing, protect and shade pedestrians, cool the ambient air temperature, and slow and retain water as part of a stormwater management system.
The guidelines work together to achieve high-quality neighborhood design in these areas:

- Neighborhood Fabric and Composition
- Community Streets
- Nature and Open Space
- Equity, Diversity, and Affordability

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**Gateway Crossing - Hagerstown, MD**

Placemaking in Practice

A former neighborhood of industrial lands and public housing sites in Western Maryland, this neighborhood revitalization effort created place by reinterpreting historic workforce housing that supported the railroad industry at the turn of the 20th century. A series of neighborhood parks and community centers were all placed within 1/4-mile walking radius.

The mixed-income redevelopment is designed to integrate well into an existing historic neighborhood, while providing energy efficient homes that are LEED for Home qualified. Due to the rocky soil conditions in this community along the foothills of the Appalachian Mountains, the site development balanced density with large areas reserved for stormwater infiltration in front yards and in the parks.

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1 Wallace Roberts & Todd, LLC.
## NEIGHBORHOOD PLAN - PLACEMAKING

### OBJECTIVES

| **Encourage walking and reduce vehicle miles traveled by mixing uses and densities** | Incorporate a diverse mix of uses within the development, or locate housing within a 15-minute walk of commercial and retail districts within diverse, community-oriented services |
| **Maximize density levels to create optimal nodes of activity** | Exceed existing density patterns or requirements for a residential and mixed-use development. Suggested minimum densities for new residential construction:  
  - Six (6) units per acre for detached/semi-detached houses  
  - Ten (10) units per acre for townhomes  
  - Twenty (20) units per acre for apartments |
| **Minimize the negative impact of car parking and encourage healthy modes of transportation** | Design car parking areas so that they are not the primary visual components of the neighborhood character by:  
  - Providing opportunities for shared parking between structures  
  - Reducing parking ratio requirements in areas served by public transit  
  - Providing preferred or discounted parking for carpools, vanpools and low-emitting, fuel-efficient vehicles  
  - Providing designated street parking for car-sharing service  
  - Limiting and screening parking and loading areas to the side and/or rear of buildings  
  - Providing bike racks and walking amenities (water fountains, benches, etc) near entrances at points of destination |
| **Maximize opportunities for passive solar heating and cooling** | For new street blocks or buildings, take advantage of natural solar heating and cooling by orienting the longer side of the street grid and/or buildings along the east-west axis |

### COMMUNITY STREETS

| **Calm traffic and create desirable, pedestrian friendly, safe streets** | Design safe, pedestrian-friendly streets by including elements, such as:  
  - Wide sidewalks on both sides of the street (4 feet minimum width on residential blocks, 8 feet minimum width on non-residential or mixed-use blocks)  
  - Street furniture (e.g., benches, street lamps)  
  - Trees and other landscaping  
  - Street curb bulb-outs  
  - Adequate space for transit stops/shelters  
  - Woonerfs (streets that give legal priority to pedestrians and cyclists)  
  - Narrower streets to reduce speeds and impervious surfaces |
<table>
<thead>
<tr>
<th>COMMUNITY STREETS</th>
<th>GUIDELINES</th>
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<tbody>
<tr>
<td>Create bike-friendly streets</td>
<td>Create a bike-friendly environment with continuous, and if possible,</td>
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<td>separated bike lanes that connect to a larger bike network, bike parking,</td>
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<td></td>
<td>and easily accessible bike racks</td>
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<tr>
<td>Maximize neighborhood connectivity</td>
<td>Connect new streets, sidewalks and bike lanes to the existing street grid</td>
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<td></td>
<td>and surrounding neighborhoods, districts, and transportation network</td>
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<tr>
<td>Enliven street frontages</td>
<td>Support a pedestrian-friendly street pattern by:</td>
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<td></td>
<td>- Orienting buildings toward the street and sidewalk with front facades</td>
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<td></td>
<td>and entrances facing a public space but not a parking area</td>
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<td></td>
<td>- Locating front building facades near the front property line</td>
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<td></td>
<td>- Zoning for pedestrian-oriented uses at the ground level</td>
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<td>(e.g., retail, community services such as libraries and community centers,</td>
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<td></td>
<td>etc..)</td>
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<tr>
<td>Beautify streets with trees and</td>
<td>Encourage the use of green infrastructure practices as standard practice</td>
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<tr>
<td>green infrastructure practices</td>
<td>for roads and public rights-of-way. For example, provide street trees</td>
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<td>on both sides of streets between the street and sidewalk. Use appropriate</td>
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<td>(drought tolerant) tree species and ensure the trees have the correct</td>
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<td>soils and root and growth space to thrive</td>
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<thead>
<tr>
<th>NATURE AND OPEN SPACE</th>
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<tbody>
<tr>
<td>Create or enhance green open space</td>
<td>Design green open space so that it is connected to existing green open</td>
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<tr>
<td>space networks</td>
<td>space networks within or adjacent to site boundaries</td>
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<tr>
<td>Conserve natural resources</td>
<td>Preserve and restore natural resources through compact conservation design</td>
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<tr>
<td>Maximize access to parks and</td>
<td>Include and/or provide direct access to parks and recreational areas</td>
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<tr>
<td>recreational areas</td>
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<tr>
<td>Maximize access to local food sources</td>
<td>Provide access to local food and opportunities for food production, by:</td>
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<td></td>
<td>- Zoning or CC&amp;Rs (covenants, conditions and restrictions)</td>
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<td>that allow for growing produce on residential property</td>
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<td>- Dedicating open space for a community garden in the development</td>
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<td>- Locating the project near a farmers’ market.</td>
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<td></td>
<td>- Planting edible landscapes as part of landscaping plans</td>
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<tr>
<td>OBJECTIVES</td>
<td>GUIDELINES</td>
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<td>---------------------------------------------------------------------------</td>
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<tr>
<td>Encourage housing type, tenure, and income diversity</td>
<td>Exceed the affordability requirements of applicable local and/or state programs, and:</td>
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<td></td>
<td>- Include a mix of housing types, tenures, income targeting and density patterns</td>
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<td></td>
<td>- Establish zoning regulations that allow accessory units</td>
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<tr>
<td>Create environments usable by all people, to the greatest extent possible,</td>
<td>To the greatest extent possible, incorporate the following universal design strategies:</td>
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<td>without the need for adaptation or specialization</td>
<td>- One zero-step entrance, at the front, back or side of the house</td>
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<td>- At least 32 inches of clear passage space for all main floor doors, including bathrooms</td>
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<td>- At least a half bath, preferably a full bath, on the main floor</td>
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<td></td>
<td>- Incorporate universal design strategies in the design of the residential units (Universal Design Resources¹,²)</td>
</tr>
</tbody>
</table>

² Center for Neighborhood Technology. Housing and Transportation Affordability Index. http://www.cnt.org/td/ht
GREEN BUILDING & INFRASTRUCTURE

Green building techniques make new and existing buildings healthier, more durable, and more energy and water efficient. Buildings are healthier when they are designed to improve the indoor air quality, thereby reducing incidence of asthma and other respiratory diseases. Also, more durable buildings consider the lifecycle of materials, selecting efficient, recycled, or recyclable construction and finish materials and using construction methods that extend their functional life, reduce cost, and reduce waste. These materials, appliances, and techniques not only conserve resources, they also reduce household energy and water costs.

These techniques are within the reach of both experienced green builders and those that are just beginning to incorporate sustainability, energy efficiency, and compact design into their construction practice and business model. In the guidelines below, experienced builders may recognize similarities with other green building certification programs, such as the Enterprise Green Communities Program, the U.S. Green Building Council LEED programs, and EPA’s ENERGY STAR ratings for homes, appliances, and fixtures.

In some municipalities, developers and builders may have varying levels of capacity or knowledge in green construction and design, or may be
located in areas with limited access to green materials. In these cases, these Green Building and Infrastructure Guidelines can serve as a list of sustainable construction methods and materials to consider. Policy makers might use this list as a good starting point in working with local builders who may have little to no experience in green building to both build capacity and establish low cost, high impact, accessible green building methods. In areas where builders have experience and capacity to design and construct green buildings, policy makers might set minimum standards or program certifications and offer incentives to project developers that exceed them.

Using cost-effective methods to create high-performance building envelopes advance local green building capacity and help households to save money on energy costs. The following strategies may serve as a menu of options that can be incorporated in various combinations into the design and construction strategy for building green to independently and cumulatively increase building and neighborhood efficiency and sustainability.

The Guidelines focus on energy and water efficiencies, but also include simple green building methods. The list is not a detailed specification, nor does it reflect EPA national green building guidance that is under development. EPA’s ENERGY STAR Qualified Homes Program contains more complete information, checklists, best practices and technical resources for the design and construction of energy-efficient homes. Please refer to the Resources-Certification Program section of this document to access these resources. The Green Building and Infrastructure Guidelines are organized as follows:

- High-Performance Buildings
- Green Building Materials
- Sustainable and Indigenous Landscaping
- Green Infrastructure
- Green Construction Best Practices
- Green Operations and Maintenance

Highlands’ Garden Village - Denver, CO
Green Building in Practice

Highlands’ Garden Village, developed by Jonathan Rose Companies, is a mixed-use transit oriented development on the site of a former amusement park. The community’s range of housing types and price points demonstrate that smaller, infill sites can accommodate diversity, and also enhance economic and social viability. By combining residential with office and neighborhood-serving retail uses, residents have the opportunity to live, work and shop within a few minutes walk of each other.

The village is an early example of the extensive use of green building and planning techniques at the neighborhood and building scale. The single-family homes exceed ENERGY STAR program requirements. All of the buildings incorporate recycled materials, LOW-VOC products, and energy efficient windows. The neighborhood’s road beds are constructed from concrete recycled directly on site from the demolition of the amusement park. The landscaping consists of water-conserving native plants and special efforts were made to keep many of the site’s existing trees. All of the community buildings are powered with alternative energy sources.
# GREEN BUILDING & INFRASTRUCTURE

## OBJECTIVES

### HIGH-PERFORMANCE BUILDINGS

<table>
<thead>
<tr>
<th>Objective</th>
<th>Guidelines</th>
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</table>
| Create high-performance residential projects to reduce household water consumption, water utility costs, and protect natural water supply | Use durable, water-efficient fixtures, such as EPA WaterSense labeled products[^1]  
- Showerheads with a flow of less than 2 gallons per minute (gpm)  
- Sink faucets with a flow of less than 2 gpm  
- Toilets that use less than 1.6 gallons per flush (gpf)  
- Urinals that are waterless or use less than 1 gpf |
| Create high-performance residential projects to reduce household energy consumption, energy utility costs, and greenhouse gas emissions | - Use Technical Resources: Guidelines for ENERGY STAR Qualified New Homes[^1]  
- Identify ENERGY STAR partners to design and build the homes[^1]  
- Identify Home Energy Rater to verify ENERGY STAR checklists[^1] |
| Design and construct sound building envelope | - Complete Thermal Bypass Inspection Checklist  
- Complete Quality Framing Checklist  
- Install ENERGY STAR qualified or better windows and doors |
| Design and install high-performance heating/ventilation/air conditioning system | - Complete HVAC Quality Installation Contractor Checklist  
- Complete HVAC Quality Installation Rater Checklist  
- Specify and install ENERGY STAR HVAC equipment  
- Install ENERGY STAR qualified thermostat (except for zones with radiant heat)  
- Install ENERGY STAR ceiling fans |
| Design water efficient plumbing system | - Use demand pumping, manifold, or core layout hot water distribution system |
| Specify and install energy efficient appliances and lighting | - Install ENERGY STAR refrigerators, dishwashers, and clothes washers/dryers  
- Use ENERGY STAR Advanced Lighting Package, and/or install ENERGY STAR bulbs in 80% of sockets[^1] |
| Specify construction methods that ensure healthy indoor air quality | - Use EPA’s Indoor airPLUS[^1]  
- Complete Indoor Air Quality Checklist  
- Complete Water-Managed Construction Checklist |
| Create high-performance commercial/mixed-use projects to reduce household water consumption, water utility costs, and protect natural water supply | Design buildings using the ASHRAE Advanced Energy Design Guides[^1] |

[^1]: See Resources section under “Certification Programs”
# Green Building & Infrastructure

## Objectives

<table>
<thead>
<tr>
<th>GREEN BUILDING MATERIALS</th>
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<tbody>
<tr>
<td>Use materials and products that are environmentally preferable and safer for occupant health</td>
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## Sustainable & Indigenous Landscaping

<table>
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<th>SUSTAINABLE &amp; INDIGENOUS LANDSCAPING</th>
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<tbody>
<tr>
<td>Reduce maintenance requirements and costs, water consumption, and negative environmental impacts</td>
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</table>

¹ See Resources section under “Certification Programs”
## GREEN BUILDING & INFRASTRUCTURE

### OBJECTIVES

<table>
<thead>
<tr>
<th>GREEN INFRASTRUCTURE</th>
<th>GUIDELINES</th>
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</table>
| Incorporate stormwater management practices as part of neighborhood design features and amenities | - Use green infrastructure and low-impact development techniques to manage runoff on-site, such as bioswales, pervious pavement, green roofs, tree plantings, bio-filtration, cisterns, and stream daylighting  
- To the extent practicable, minimize impervious surfaces by using gravel, permeable pavers, open grid pavers, and similar pervious surfaces for driveways, parking lots, and other areas that would usually be paved  
- Encourage green infrastructure practices in landscaping features, such as community gardens, rain gardens and large canopy trees  
- Locate deciduous trees and other plant materials to provide shading in summer and solar access in winter, as well as to provide stormwater management for any impervious areas on site |
| Mitigate heat island impacts | - Use ENERGY STAR qualified or other highly reflective roof products  
- Use paving materials with high solar reflectance  
- Select and install street trees, and/or preserve existing trees, to shade sidewalks and hard surface areas |

### GREEN CONSTRUCTION BEST PRACTICES

| Control soil erosion and sedimentation | - Implement local or state erosion and sedimentation controls during construction using EPA’s Stormwater Best Management Practices¹ |
| Redevlop brownfield sites using ecologically innovative and responsible environmental remediation and abatement practices | - Conduct an environmental assessment that meets the requirements of the local or state environmental protection agency. If applicable, employ EPA’s Green Remediation Best Management Practices¹ |
| Reduce excess construction waste and make recycling easy | - Use EPA Steps to Lead-Safe Renovation, Repair and Painting¹  
- Whenever possible, use building technologies, materials and finishes that minimize finishing on-site  
- Place recycling bins on construction site for recyclable/reusable waste materials that can be diverted from landfills |

¹ See Resources section under "Certification Programs"
## GREEN BUILDING & INFRASTRUCTURE

### OBJECTIVES

<table>
<thead>
<tr>
<th>GREEN ENERGY PRODUCTION &amp; SUPPLY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Encourage on-site production and use of renewable energy sources</strong></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Enhance on-site energy production with off-site renewable energy sources</strong></td>
</tr>
</tbody>
</table>

### GREEN OPERATIONS & MAINTENANCE

| Ensure that ongoing operations and maintenance practices promote green and healthy living by developing operations and orientation manuals | - Building maintenance manual¹ |
| | - Homeowner / Renter green guide¹ |
| | - Homeowner / Renter green orientation¹ |

¹ See Resources section under “Green Development, Neighborhood, and Building Resources”
RESOURCES

This section provides a reference list of certification programs and resources for readers who are interested in obtaining additional information on planning or certifying neighborhoods and buildings that are healthy, walkable, diverse in uses and incomes, and environmentally responsible. In addition to certification programs, there is also a list of leading entities in the fields of smart growth, neighborhood design, and green building.

SMART GROWTH PLANNING, DEVELOPMENT AND DESIGN RESOURCES

Federal Agencies
Federal agencies provide a wide range of resources as well as grants, loans, and advisory services. Establishing long-term relationships with government agencies is important, particularly in projects that promote smart growth and energy-efficient development and design. Regular research on key websites helps provide access to new resources, funding notifications, and policy initiatives at the federal level. For example, as an extension of its work supporting community development and affordable housing, HUD joined with EPA and DOT in the Partnership for Sustainable Communities to facilitate integrated planning to help American families gain better access to affordable housing, more transportation options, and lower transportation costs.

Some key federal agencies are:

U.S. Environmental Protection Agency (EPA)
www.epa.gov
Office of Administrator, Office of Policy Economics and Innovation, Smart Growth Program
www.epa.gov/smartgrowth

Office of Air and Radiation
www.epa.gov/oar

Office of Environmental Justice
www.epa.gov/compliance/environmentaljustice/index.html

Office of Solid Waste and Emergency Response
www.epa.gov/swerrims

Office of Water
www.epa.gov/ow

U.S. Department of Energy (DOE)
www.energy.gov

U.S. Department of Energy Center of Excellence for Sustainable Development
www.smartcommunities.ncat.org

U.S. Department of Housing and Urban Development (HUD)
www.hud.gov

U.S. Department of Housing and Urban Development (HUD) – Community Planning and Development Green Homes and Communities
www.hud.gov/offices/cpd/about/conplan/greenhomes.cfm

U.S. Department of Transportation (DOT)
www.dot.gov

U.S. Department of Transportation (DOT)
Federal Transit Administration Transit and Environmental Sustainability
www.fta.dot.gov/planning/planning_environment_8510.html

U.S. Department of Transportation (DOT) – Federal Transit Administration Transit-Oriented Development
www.fta.dot.gov/planning/planning_environment_6932.html

U.S. Department of Agriculture (USDA)
www.usda.gov

U.S. Department of Agriculture – Sustainable Development
http://www.usda.gov/oece/sustainable/funding.htm

Centers for Disease Control and Prevention (CDC)
www.cdc.gov

Centers for Disease Control and Prevention (CDC) – Healthy Communities Program
www.cdc.gov/healthycommunitiesprogram

Regional Organizations
Metropolitan Planning Organizations (MPO) and Regional Council of Governments that plan, research, and support smart growth and green development patterns are often sources of information. Therefore, it is important to learn about your local regional planning organizations. They are frequently members of the National Association of Regional Councils and/or the American Metropolitan Planning Organizations. For more information on these groups or to find your regional organization, visit their websites at:

American Metropolitan Planning Organization
www.ampo.org

National Association of Regional Councils
www.narc.org
Professional Associations
Professional associations are excellent resources for identifying experienced project teams and researching best practices in green design, as well as potential planning and design grant opportunities. Some key professional associations are:

American Planning Association  
www.planning.org

American Institute of Architects  
www.aia.org

Building Owners and Managers Association International  
www.boma.org

National Association of Homebuilders  
www.nahbgreen.org

Urban Land Institute  
www.uli.org

Associations for Public Agencies and Officials  
These associations provide resources for public officials and staff to help them create more opportunities for smart growth development, community revitalization, energy-efficient infrastructure, transportation options, and community development to address climate change.

International City/County Management Association (ICMA)  
www.icma.org

ICLEI — Local Governments for Sustainability  
www.iclei.org

Local Government Commission  
www.lgc.org

National Association of Counties (NACo)  
www.naco.org

National Governors Association – Environment, Energy & Natural Resources Best Practices  
www.nga.org/portal/site/nga

U.S. Conference of Mayors – Mayors Climate Protection Center  
www.usmayors.org/climateprotection

Certification Programs
Green certification and rating programs provide standards for measuring and evaluating a type of building product, such as residential or commercial buildings, or large-scale, multi-phased projects with several buildings. These programs include certain prerequisites and criteria to be addressed as part of the project assessment process. Most programs are based on a point system that evaluates a project’s location, context, design, construction, and operation to determine the project’s eligibility for certification. Some key certification programs include:

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) – Advanced Energy Design Guides  
www.ashrae.org/technology/page/938

ENERGY STAR Program – A Joint Program of the EPA and DOE  
www.energystar.gov/index.cfm?c=new_homes.hm_index

ENERGY STAR Qualified Homes (Checklists, Technical Resources, Specifications, etc)  
www.energystar.gov/index.cfm?c=bldrs_lenders_raters.homes_guidelns

ENERGY STAR Partners (Find or become a Partner)  
www.energystar.gov/index.cfm?c=partners.pt_index

www.energystar.gov/index.cfm?c=fixtures.alp_consumers
U.S. Environmental Protection Agency (EPA)  
www.epa.gov

EPA Indoor airPLUS  
www.epa.gov/indoorairplus/

EPA National Menu of Best Practices  
cfpub.epa.gov/npdes/stormwater/menubm.htm

EPA Steps to Lead-Safe Renovation, Repair and Painting  
www.epa.gov/lead/pubs/renovation.htm

EPA WaterSense  
www.epa.gov/WaterSense

EPA Smart Growth Code Auditing  
www.epa.gov/smartgrowth/scorecards/index.htm

Enterprise Green Communities  
www.enterprisegreencommunitiesonline.org

Enterprise Green Communities Templates  
www.greencommunitiesonline.org/tools/resources/index.asp?c1

NSF International - Sustainable Building Product Standards  
http://www.nsf.org/business/sustainability

National Association of Home Builders – National Green Building Program  
www.nahbgreen.org

U.S. Green Building Council – Leadership in Energy and Environmental Design (LEED)  
www.usgbc.org

**Green Development, Neighborhood, and Building Resources**

These resources provide tools to create development plans and policies that build well-designed, green communities. The following list includes key organizations involved in smart growth, green building and sustainable development. Also noted in this list are special program areas that these organizations have developed.

Center for Inclusive Design and Environmental Access  
Program Area: Visibility Booklet (pdf)  
www.ap.buffalo.edu/idea/Home/index.asp

Center for Neighborhood Technology  
www.cnt.org  
Program Area: Housing and Transportation Affordability Index  
www.cnt.org/tcd/ht

Center for Universal Design  
www.design.ncsu.edu/cud  
Program Area: Universal Design in Community Planning  
www.design.ncsu.edu/cud/about_ud/udincommunity.html

Congress for the New Urbanism  
www.cnu.org  
Program Area: Achieving Sustainability from Building to Region  
www.cnu.org/Intro_to_new_urbanism

Global Green USA  
www.globalgreen.org  
Program Area: Green Building Resource  
www.globalgreen.org/greenurbanism

Leadership for Healthy Communities  
www.leadershipforhealthycommunities.org  
Program Area: Active Living  
www.leadershipforhealthycommunities.org/component/option,com_advancedtags/view,tag/id,2/Itemid,74

Lincoln Land Institute of Land Policy  
www.lincolninst.edu  
Program Area: Visualizing Density  
www.lincolninst.edu/subcenters/visualizing-density/
National Complete Streets Coalition
www.completestreets.org
Program Area: Complete Street Fundamentals
www.completestreets.org/complete-streets-fundamentals

Natural Resources Defense Council
www.nrdc.org
Program Area: Smart Growth
www.nrdc.org/smartgrowth/default.asp

Playbook for Green Buildings and Neighborhoods – Strategic Local Climate Solutions
www.greenplaybook.org

Project for Public Spaces
www.pps.org

Reconnecting America – Center for Transit-Oriented Development
www.reconnectingamerica.org

Sierra Club USA
www.sierraclub.org
Program Area: Cool Cities
www.coolcities.us
Program Area: Clean Energy Solutions
www.sierraclub.org/energy

Smart Growth America
www.smartgrowthamerica.org

Smart Growth Leadership Institute – A Project of Smart Growth America
www.sgli.org
Smart Growth Network
www.smartgrowth.org/sgn/default.asp

Smart Growth Online – A Service of the Smart Growth Network
www.smartgrowth.org

Sustainable Communities Network – Linking Cities to Resources and to One Another
www.sustainable.org
Sustainable Sites Initiative – Sustainable Landscapes
www.sustainablesites.org

Urban Advantage – Envisioning Urbanism
www.urban-advantage.com

The Urban Land Institute
www.uli.org
Program Area: Smart Growth Alliance Information Network
www.uli.org/CommunityBuilding/Smart%20Growth%20Alliances.aspx
Program Area: Regional Leadership and Cooperation – Smart Growth
www.uli.org/CommunityBuilding/RegionalLeadershipandCooperation/Smart%20Growth.aspx

Walk Score – Find a Walkable Place to Live
www.walkscore.org
1331 Pfingsten Rd.
(R-4 District) –
Victor Melnikov, architect
# Architectural Control Commission Application

**Single Family Residence Review**

**APPLICABLE MUNICIPAL CODE SECTIONS:** Section 2-493(3) and Section 6-8.

The ACC typically meets the 2nd Thursday of each month. Applicants are welcome, but not required to attend. All applications must be submitted seven (7) days prior to the scheduled meeting. Approved drawings can be picked up the day following the meeting.

**SUBMITTAL REQUIREMENTS:**

1. Submit one (1) copy of this completed application. **Incomplete Applications Will Not Be Reviewed.**

2. Submit one (1) set of **architectural construction drawings**, which are to include; completed site plan, floor plans, and exterior elevations (with building materials indicated on plans/elevations). Drawings may be half-sized drawings.

3. Submit current color photographs on **8 1/2 x 11” paper (not original glossy pictures)** of the three (3) existing properties on both sides of the proposed residence and the property directly across the street. If the proposed residence is on a corner, submit photo(s) of the property(s) across the street(s). **All photos must be clear and show the character of the existing residences.**

4. All photos must be labeled with addresses and relative location to the subject property (i.e., across the street; left 1, 2, 3; right 1, 2, 3). **IN ADDITION, provide a “key plan” drawing/sketch clearly identifying the photo locations in relationship to the subject property.**

## PROJECT DATA (to be completed by applicant):

<table>
<thead>
<tr>
<th>Property Address</th>
<th>1331 PFINGSTEN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subdivision Name</td>
<td>Lot No.</td>
</tr>
<tr>
<td>Zoning District</td>
<td>R-1 R-2 R-3 R-4 R-5</td>
</tr>
<tr>
<td>Lot Size</td>
<td>29,654</td>
</tr>
<tr>
<td>Owner</td>
<td>Phone</td>
</tr>
<tr>
<td>Address</td>
<td>City/State/Zip</td>
</tr>
<tr>
<td>Architect</td>
<td>VICTOR MELNIKOV</td>
</tr>
<tr>
<td>Address</td>
<td>910 CANTON #1</td>
</tr>
<tr>
<td>General Contractor</td>
<td>Phone</td>
</tr>
<tr>
<td>Address</td>
<td>City/State/Zip</td>
</tr>
<tr>
<td>Drawings Dated</td>
<td>Model Name/Number</td>
</tr>
<tr>
<td>Submitted By</td>
<td>Phone</td>
</tr>
<tr>
<td>Name (print)</td>
<td>VICTOR MELNIKOV</td>
</tr>
<tr>
<td>Address</td>
<td>City/State/Zip</td>
</tr>
<tr>
<td>Signature</td>
<td>Date</td>
</tr>
<tr>
<td></td>
<td>10-16-2019</td>
</tr>
</tbody>
</table>

Once an application is submitted and approved, any exterior design changes must be resubmitted for commission review. You will be notified by telephone if the application/review is denied.

## POSSIBLE REASONS FOR DENIAL (for office use only)

- Incomplete application.
- Incomplete photos, unclear photos, lack of proper labeling.
- Building materials not indicated on plans/elevations.
- Proposed house too similar to NEIGHBORING house(s).
- Other: ____________________
1321
1331 Pfingsten
1ST TO THE SOUTH (VACANT)
2ND TO THE SOUTH
3D TO THE SOUTH
3D TO THE NORTH
2ND TO THE NORTH
1ST TO THE NORTH
3D TO THE NORTH
2nd to the North