# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.</td>
<td>INTRODUCTION AND METHODOLOGY</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>1. Methodology</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Purpose</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Methodology and Time Line</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Terminology</td>
<td></td>
</tr>
<tr>
<td>B.</td>
<td>U.S. CONSTRUCTION ACTIVITY</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>1. U.S. Summary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. U.S. Residential Starts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Non-residential Floor Area</td>
<td></td>
</tr>
<tr>
<td>C.</td>
<td>DOOR MARKET</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>1. Summary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Market Size by Application</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Segmentation by Material</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Wood Doors by Application</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Historic and Projected Growth</td>
<td></td>
</tr>
<tr>
<td>D.</td>
<td>WINDOW MARKET</td>
<td>26</td>
</tr>
<tr>
<td></td>
<td>1. Summary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Residential-Type Market Size by Application</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Residential-Type Window Segmented by Application and Material</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Residential-Type Wood Windows in Conventional Applications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5. Residential-Type Vinyl Windows in Conventional Applications</td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Historic and Projected Growth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. U.S. Non-residential Glass and Windows Market Size</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Non-residential Historic and Projected Growth</td>
<td></td>
</tr>
<tr>
<td>E.</td>
<td>PATIO DOOR MARKET</td>
<td>65</td>
</tr>
<tr>
<td></td>
<td>1. Summary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Market Size by Application</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Segmentation of Wood Units</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Patio Door Forecasts</td>
<td></td>
</tr>
<tr>
<td>F.</td>
<td>SKYLIGHT MARKET</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td>1. Summary</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Market Size by Application</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Commercial Skylights</td>
<td></td>
</tr>
</tbody>
</table>
APPENDICES:

A.  Eleven U.S. Census Regions
B.  U.S. Entry and Interior Door Market by Region
C.  U.S. Conventional Residential Window Market by Region
D.  Non-residential Vision Area Models
E.  U.S. Patio Door Market by Region
F.  U.S. Glass Usage by Region
# LIST OF EXHIBITS

<table>
<thead>
<tr>
<th>Section</th>
<th>Number &amp; Type</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
</table>
| A       | A.1 Time Line | Program Time Line 2018  
  - Program Approval  
  - Draft Report  
  - Report Publication | 3 |
| B       | B.1 Bar Graph | U.S. New Residential Construction Segmented by Type of Structure 2011-2020F  
  - Manufactured Homes  
  - Multi-Family  
  - Single Family | 8 |
|         | B.2 Map       | U.S. Conventional Housing Starts by Geographic Region 2017  
  - 11 Regions | 9 |
|         | B.3 Pie Chart | U.S. Residential Housing Starts by Region 2017  
  - South  
  - West  
  - Midwest  
  - Northeast | 10 |
|         | B.4 Pie Chart | U.S. Residential Housing Starts by Region 2019 Forecasted  
  - South  
  - West  
  - Midwest  
  - Northeast | 10 |
|         | B.5 Table     | Retail, Wholesale Building Materials Trade Expenditures  
  - Retail Trade Expenditures  
  - Wholesale Trade Expenditures | 11 |
|         | B.6 Bar Chart | Trade Expenditures – Retail, Wholesale Building Materials  
  - Billions of Dollars 2010-2020F | 11 |
|         | B.7 Table     | New U.S. Housing by Type of Structure  
  Private and Public, Including Farm 2010 – 2020F  
  - Total Shelter  
  - Manufactured Housing  
  - Total Conventional  
  - Single Family  
  - Multi-Family | 12 |
B (cont.) B.8 Table  New U.S. Conventional Housing by Geographical Region
Private and Public, Including Farm
2010 – 2020F
- Northeast
- Midwest
- South
- West

B.9 Table  U.S. Manufactured Housing Shipments to Dealers by Geographical Region
Private and Public, Including Farm
2010 – 2020F
- Northeast
- Midwest
- South
- West

B.10 Bar Chart  Forecasted Non-residential Contract Awards by Floor Area Segmented by Major Building Category
2013 – 2020F
- Manufacturing/Warehouse
- Office/Hotel/Institutional
- Store/Mercantile

B.11 Map  New U.S. Non-residential Contract Awards by Geographical Region
2017
- 11 Regions

B.12 Pie Chart  Non-residential Contracts by Region
2017
- South
- West
- Midwest
- Northeast

B.13 Pie Chart  Non-residential Contracts by Region
2018 Forecasted
- South
- West
- Midwest
- Northeast

B.14 Table  Non-residential Contract Awards (Reported) by Selected Building Types and Regions
2013 – 2020F
- Manufacturing/Warehouse
- Office/Hotel/Institutional
- Store/Mercantile
- Total Non-residential
C.1 Table  Total Market for U.S. Doors by Application 2017
- Residential Entry
- Non-residential Entry

C.2 Table  Total U.S. Market for Doors by Construction Type and Application 2017
- New Construction
- Remodeling
- Replacement

C.3 Pie Chart  U.S. Residential Entry Doors by Material 2017
- Steel
- Wood
- Fiberglass

C.4 Pie Chart  U.S. Residential Fiberglass Entry Doors by Finish 2017
- Smooth
- Molded/Textured

C.5 Table  Non-residential Entry Doors by Material 2017
- Steel
- Aluminum
- Wood
- Other

C.6 Table  Wood Doors by Application 2017
- Residential Entry
- Non-residential Entry

C.7 Table  Sales of U.S. Doors by Material and Application 2011-2020F
- Steel
- Wood
- Fiberglass
- Aluminum

D.1 Table  Total Market for Residential-Type Window Units by Application 2015 and 2017
- Residential New Construction
- Residential Remodel
- Residential Replacement
- Manufactured Housing
- Non-residential New Construction
- Non-residential Remodel
- Non-residential Replacement
D.2 Table  
**Total U.S. Market for Residential-Type Window Units by Application and Framing Material 2015 and 2017**
- Residential, Non-residential, and Manufactured Housing Window Units
- *Wood and Clad Wood*
- Vinyl
- Aluminum
- Other

D.3 Bar Graph  
**Total U.S. Conventional Residential Window Demand Historic and Forecasted Window Usage by Framing Material 2011 – 2020F**
- *Wood and Clad Wood*
- Aluminum
- Vinyl
- Other

D.4 Table  
**U.S. Conventional Residential Window Usage by Framing Material Segmented by Construction Type 2015 and 2017**
- New, Remodel, and Replacement
- *Wood and Clad Wood*
- Vinyl
- Aluminum
- Other

D.5 Table  
**Conventional Residential Window Usage Segmented by Framing Material 2015 and 2017**
- Wood
- Aluminum Clad Wood
- Vinyl Clad Wood
- Aluminum with Thermal Break
- Aluminum without Thermal Break
- Vinyl
- Other
D.6 Table
Conventional Residential Window Usage Segmented by Configuration 2015 and 2017
- Wood, Vinyl, Aluminum, and Other
- Double Hung
- Single Hung
- Casement
- Sliding/Slider
- Awning
- Fixed
- Specialty

D.7 Pie Chart
Conventional Residential Window Volumes Segmented by Customization 2015 and 2017
- Standard Stock Windows
- Customized Windows

D.8 Table
Conventional Residential Window Glass Usage Segmented by Framing Material 2015 and 2017
- Single Lite, Two Lite Sealed IG, Other
- Wood
- Vinyl
- Aluminum
- Other

D.9 Pie Chart
Conventional Residential Windows – Insulating Glass Segmented by Type of Spacer 2015 and 2017
- Rigid Warm Edge
- Non-Rigid Warm Edge
- Aluminum Spacer

D.10 Pie Chart
Conventional Residential Windows – Hurricane Resistant Florida, All Other Regions 2015 and 2017
- Non-Hurricane
- Hurricane Impact Glazing
- Hurricane Non-Impact Glazing

D.11 Table
Conventional Residential Windows Segmented by Glass Type 2015 and 2017
- Wood, Vinyl, Aluminum, and Other
- Clear
- Tinted/Reflective
- Low-E

D.12 Pie Chart
Conventional Residential Windows – Low-E Segmented by Coating Type 2015 and 2017
- Sputtered
- Pyrolytic
D.13 Table

Conventional Residential Windows – Energy Ratings
Segmented by Rating Type
2015 and 2017
- Wood, Vinyl, Aluminum/Other
- NFRC Rating
- NFRC and ENERGY STAR Rating
- No Rating

D.14 Table

Conventional Residential Wood Window Units
Segmented by Configuration
2015 and 2017
- Double Hung
- Single Hung
- Casement
- Gliding/Slides
- Awning
- Fixed
- Specialty

D.15 Table

Conventional Residential Wood Window Units – Window Sash and Frame Segmented by Wood Species Used
2015 and 2017
- Ponderosa Pine
- Southern Yellow Pine
- Radiata Pine
- White Pine
- Fir/Hemlock
- Other Softwoods
- Oak
- Other Hardwoods

D.16 Pie Chart

Conventional Residential Wood Window Units – Non-Clad Segmented by Exterior Finish
2015 and 2017
- Primed/Prefinished
- Natural
- No Finish

D.17 Pie Chart

Conventional Residential Wood Window Units Segmented by Type of Insulating Spacer
2015 and 2017
- Rigid Warm Edge Spacer
- Non-Rigid Warm Edge
- Aluminum Spacer

D.18 Pie Chart

Conventional Residential Wood Window Units Segmented by Low-E Usage and Technology
2015 and 2017
- Sputtered
- Pyrolytic
D.19 Table

Conventional Residential Vinyl Window Units
Segmented by Configuration
2015 and 2017
- Double Hung
- Single Hung
- Casement
- Gliding/Slider
- Awning
- Fixed
- Specialty

D.20 Pie Chart

Conventional Residential Vinyl Window Units
Segmented by Type of Insulating Spacer
2015 and 2017
- Rigid Warm Edge Spacer
- Non-Rigid Warm Edge
- Aluminum Spacer

D.21 Pie Chart

Residential Vinyl Window Units
Segmented by Fabrication Method
2015 and 2017
- Fully Welded Frame
- Mechanically Fastened Frame
- Hybrid of Mechanically Fastened Frame and Fully Welded Frame

D.22 Pie Chart

Conventional Residential Vinyl Window Units
Segmented by Solid Extrusion Color
2015 and 2017
- White
- Tan
- Other

D.23 Table

Conventional Residential Windows Usage
2008-2018 Forecast
- New Construction, Remodel/Replacement and Total Construction
- Wood
- Aluminum
- Vinyl
- Fiberglass
- Other
Table D.24: New Non-residential Construction and Major Additions Segmented by Building Category 2015 and 2017
- Curtain Wall, Storefront, Site-Fabricated Windows and Shop-Fabricated Windows
- Office and Bank
- Stores, Other Mercantile
- Manufacturing/Warehouses
- Educational
- Hospital/Health Care (incl. Government)
- Public/Government
- Religious
- Amusement/Recreational
- Hotel/Motel/Dormitory
- Miscellaneous
- High-Rise Multi-Family

Table D.25: Total Non-residential Vision Area Segmented by Type of Construction 2015 and 2017
- New Building/Major Additions and Replacement
- Curtain Wall
- Storefront
- Site-Fabricated Windows
- Shop-Fabricated Windows

Table D.26: Framing Materials Used in Non-residential Construction 2015 and 2017
- Curtain Wall, Storefront, Site-Fabricated Windows, and Shop-Fabricated Windows
- Aluminum with Thermal Break
- Aluminum without Thermal Break
- Wood
- Vinyl, Other

Table D.27: Non-residential Aluminum Framing Segmented by Finish Material 2015 and 2017
- Anodized Finish
- Standard Paint
- High-End Paint

Table D.28: Calculations – High-Rise Construction – New and Major Additions 2015 and 2017
- Ratio High-Rise, High-Rise Vision Area, Total Vision Glass Area
- Office/Bank
- All Other

Table D.29: Total U.S. Non-residential Glass Usage Segmented by Glazing Configuration 2015 and 2017
Single Lite and Non-Sealed
Insulating glass Units

Glass Usage – Non-residential Windows 2013 to 2017
- Clear
- Tint
- Reflective
- Low-E

Usage of Low-E Segmented by Coating Technology 2015 and 2017
- Sputter and Suspended Film
- Pyrolytic

Non Residential Glazing – Hurricane Resistant Florida, All Other Regions 2017
- Non-Hurricane
- Hurricane Impact Glazing
- Hurricane Non-Impact Glazing

U.S. Market for Commercial Windows Segmented by Window Type 2017
- Site-Fabricated
- Shop-Fabricated

U.S Market for Architectural Rated Shop-Fabricated Windows by Rating Segmented by Window Rating Type 2015 and 2017
- AW
- CW

U.S. Architecturally-Rated Shop-Fabricated Windows Segmented by Window Configuration 2015 and 2017
- Fixed
- Projected / Awning
- Slider
- Hung
- Door
- Specialty/Other

U.S Shop-Fabricated Patio and Terrace Doors Segmented by Door Type 2017
- Hinged
- Sliding

- New Construction
- Remodeling & Replacement
E.1 Table
Total U.S. Market for Residential Patio Doors
Segmented by Framing Material
2013 - 2017
- Wood
- Aluminum
- Vinyl
- Steel
- Fiberglass
- Other

E.2 Table
Total U.S. Market for Residential Patio Doors
Segmented by Construction Type and Framing Material
2015 and 2017
- New Construction, Remodel, and Replacement
- Wood
- Aluminum
- Vinyl
- Steel
- Fiberglass
- Other

E.3 & E.4. Pie Charts
Patio Doors by Framing Material
2015 and 2017
- Wood
- Aluminum
- Vinyl
- Steel
- Fiberglass
- Other

E.5 Table
Total U.S. Market for Residential Patio Doors
Segmented by Application and Framing Material
2015 and 2017
- Hinged and Sliding
- Wood
- Aluminum
- Vinyl
- Steel
- Fiberglass
- Others

E.6 Table
Total U.S. Sliding and Hinged Patio Doors
Segmented by Number of Panels
2015 and 2017
- One Panel, Two Panel and Three or More Panels
- Wood
- Aluminum
- Vinyl
- Steel
- Fiberglass
- Others
E (cont.)  E.7 Table  Total U.S. Market for Residential Patio Doors  Segmented by Low-E Usage and Technology  2015 and 2017  
- Clear, Tinted, Reflective and Low-E  
- Wood  
- Aluminum  
- Vinyl  
- Steel  
- Fiberglass  
- Others

E.8 Table  Wood Patio Doors  Segmented by Cladding and Type of Door  2015 and 2017  
- Hinged and Sliding  
- Clad  
- Non-Clad

E.9 Pie Chart  Non-Clad Wood Patio Doors  Segmented by Finish Type  2017  
- Primed/Painted  
- Natural Finish  
- No Finish

E.10 Table  Wood Patio Door Lumber Type  Segmented by Wood Species  2017  
- Ponderosa Pine  
- Southern Yellow Pine  
- Radiata Pine  
- White Pine  
- Fir/Hemlock  
- Oak  
- Other Softwoods  
- Other Hardwoods

E.11 Table  Residential Patio Door Market  2011 – 2020F  
- New Construction  
- Remodel and Replacement

F  F.1 Table  Residential-Type Skylights (Including Light Commercial)  2011 – 2017  
- New Construction  
- Remodel/Replacement

F.2 Table  Skylights by Type and Application  2017  
- Plastic Glazed Skylight and Glass Glazed Skylight  
- Residential  
- Light Commercial
F.3 Pie Chart
Total Market for Skylights by Type
2015 and 2017
- Glass Glazed Skylights
- Plastic Glazed Skylights

F.4 Pie Chart
Plastic Glazed Skylights by Type
2017
- Acrylic
- Polycarbonate

F.5 Pie Chart
Plastic Glazed Skylights by Type
2017
- Translucent/Diffusing
- Tinted/Colored
- Clear

F.6 Pie Chart
Glass Glazed Skylights by Type
2017
- Low-E
- Clear
- Tinted
- Reflective

F.7 Pie Chart
Residential-Type Skylights by Framing Material
2017
- Vinyl
- Aluminum
- Wood and Clad Wood
- Frameless/Other

F.8 Table
Residential-Type Skylights by Type and Application
2017
- Plastic Glazed Skylights and Glass Glazed Skylights
- Fixed
- Venting
- Venting – Motorized/Operable

F.9 Table
Forecast of Residential-Type Skylights
2016 – 2020F
- New
- Remodeling / Replacement

Appendix A
APDX-A.1 Map
Eleven U.S. Census Regions

APDX-A.2 Table
Four to Eleven Region Conversion and Abbreviation Definitions

Appendix B
Table
U.S. Entry Door Market Segmented by Application and Estimated Geographic Segmentation
2017
- Residential
- Non-residential
Appendix C  Table  U.S. Conventional Residential Window Market Segmented by Application and Estimated Geographic Segmentation 2017
- New Construction
- Remodeling and Replacement

Appendix D  APDX-D.1  Graphic  Conversion: Total Vision Glass Area
APDX-D.2  Graphic  Model: Total Vision Glass Area
APDX-D.3  Table  United States Non-residential New and Major Additions 2017 Contract Awards
- Office and Bank
- Stores, other Mercantile
- Manufacturing/Warehouse
- Educational
- Hospital/Healthcare (including Government)
- Public/Government
- Religious
- Amusement/Recreational
- Hotel/Motel/Dormitory
- Miscellaneous
- High-Rise Multi-Family

APDX-D.4  Table  U.S. Non-residential Total Wall Area – New and Additions 2017
- Floor Area and Wall-to-Floor Ratio
- Office and Bank
- Stores, other Mercantile
- Manufacturing/Warehouse
- Educational
- Hospital/Healthcare (incl. Government)
- Public/Government
- Religious
- Amusement/Recreational
- Hotel/Motel/Dormitory
- Miscellaneous
- High Rise Multi Family

APDX-D.5  Table  U.S. Non-residential Vision and Opaque Wall Area – New and Additions Segmented by Building Category 2017
- Total Wall Area and Vision Glass
- Office and Bank
- Stores, other Mercantile
- Manufacturing/Warehouse
- Educational
- Hospital/Healthcare (incl. Government)
- Public/Government
- Religious
- Amusement/Recreational
- Hotel/Motel/Dormitory
• Miscellaneous
• High-Rise Multi-Family

Appendix E Table U.S. Patio Door Market
Segmented by Application and Estimated Geographic Segmentation
2017
• New Construction
• Remodeling and Replacement

Appendix F Table U.S. Glass Usage
Segmented by Glass Type and Estimated Geographic Segmentation
2017
• Clear
• Tinted
• Low-E

Copyright © 2018 AAMA
All rights reserved.

This report or any part thereof may not be reproduced in any form without the written permission of the publisher.