Flood Risk Communication

- Communicate “Full Risk Rate”
  - Subsidies will eventually expire
- Change the conversation
  - From “in/out” to “above/below”
  - From zones and elevations to depths and dollars
- Message varies depending on
  - Individual structure characteristics
  - Depth of flooding
  - Purchase requirements
Salina, Kansas (2015 pop. 47,700)

- Effective study was from 1986
  - Un-modernized, Q3 product
- New FIRM
  - SWMM model for interior drainage
  - Removed Zone A streams
- Accredited levee protects 40% of town

Comparisons
- Effective vs. proposed studies
- With vs. without federal subsidy*

* FEMA Flood Insurance Manual – November 2015
Salina Study Statistics

- 1009 structures in effective SFHA
  - 699 pre-FIRM (i.e. built before 1976)
  - 1,871 LOMAs
- 418 structures in proposed SFHA
  - 112 new structures added
  - 703 structures removed (50% would be impacted by a levee failure)
  - 306 structures “no change”
Structure-Based Risk Assessments

- Latest NFIP Reform
  - BW-12
  - HFIAA

- Benefits
  - Accurate
  - Affordable
  - Available

Quantify
Mitigate
Communicate

FLOOD RISK
Floodprone Inventory
Estimating Flood Depths

Depth of flooding ??
Estimating Flood Depths

Depth of flooding = 2.25'

3 Steps = 1.75'

100-year Flood Elevation ✓

First Floor ✓

Ground ✓

534’ - FEMA

531.75’

530’ - LiDAR
- Dozen scripts/tools
- 165 Data Fields
- 4 Main functions
  - Depth
  - Damage
  - Insurance Rate
  - Benefit/Cost
How Close is Close Enough?

- **First Floor Elevations**
  - Approximately 250 surveyed elevations
  - Calculated elevations
  - Average difference = 2 inches

- **Flood Depths**
  - Homeowner reported depths (approx. 50)
  - Surveyed high water marks
  - Calculated depths
  - Average difference = 1 inch
Alternative Approaches

- Elevation Certificates
- Mobile LiDAR
  - Line of sight issues
  - Data intensive
  - Cost considerations
- Field Survey
  - Labor intensive
  - Safety concerns
  - Management & coordination
Benefits

► Accurate
  ► Within 2 inches (average) of surveyed elevations
  ► Within 1 inch (average) of homeowner-reported flood depths

► Affordable
  ► 20 times more cost-effective than traditional survey
  ► Half the cost of mobile LiDAR collection

► Available
  ► Dataset can be created in a few weeks
OK .....so now what?

► Decision Support
  ► Categorize risk (high/moderate/low)
  ► Calculate damages

► Risk Communication
  ► Calculate insurance rates
  ► Develop tailored messaging

► Develop Mitigation Alternatives
Impact Hot Spots

- Changes Since Last FIRM – only better!
- Areas of significant rate change
  - Calculations are performed for each structure
  - Impacts are aggregated
  - No individual rates or premiums are shown
- How to use this for outreach?
  - Structures newly mapped into SFHA
  - Structures removed from SFHA
  - Structures with “no change”
What was the effect of the new mapping?

- Removed from Floodplain
  - Category 3: Homeowners can now receive a preferred risk rate.
- Remained in Floodplain
  - Is the new 100-yr flood depth at or above the first floor?
    - No: What are the expected flood insurance impacts?
- Added to Floodplain
  - Is the new 100-yr flood depth at or above the first floor?
    - No: Communicate the importance of getting property rated (Elevation Cert.) and new insurance requirements.

- Decreasing Rates
  - Are flood depths increasing or decreasing?
    - Decreased or Similar Depth: Category 5: Communicate that flood risk is still present, but new modelling has helped our understanding of that risk.
    - Increased Depth: Category 6: Communicate increased risk from new modelling.
- Static Rates
- Increasing Rates
  - Caused by increasing depths or future subsidy loss?
    - Increased Depth: Category 7: Communicate future loss of subsidy and depth based rating.
    - Subsidy Loss:
Salina Results

- Outreach to local officials is ongoing
- Messaging is very different than before
  - Information is more substantive
  - Move the discussion towards mitigation
  - Outreach can be tailored to varied situations
    - People that no longer are required to carry a policy
    - People that are newly added
    - People that are still in, but rates are decreasing
    - People that are still in, but rates are increasing

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<tr>
<th>Structure Status</th>
<th>Below -2 ft</th>
<th>-2 - -1.1 ft</th>
<th>-1 - 0 ft</th>
<th>0.1 - 0.4 ft</th>
<th>0.5 - 1 ft</th>
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<th>Above 10 ft</th>
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<td>49</td>
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<td>Grand Total</td>
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- 18% 36% 36%
- Flood Depth < 0 ft: 89%
### Flood Depth

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Flood Depth < 0 ft: 89%

Flood Depth:

- 18%
- 36%
- 36%
Better Risk Assessments

- Improved mitigation planning
- Improved communication
- Improved risk reduction
Questions......Thank You!

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