

Hurricane Evacuation Workshop Minutes February 27, 2012

Commissioner Teri Johnston, City of Key West, welcomed the group and thanked Monroe County for allowing the use of the Harvey Government Center. Commissioner Johnston recognized members of the audience.

Naval Air Station (NAS) Key West Emergency Manager Steve McBride provided information regarding the phased procedures for evacuation of the NAS Key West. Mr. McBride began with explaining that there are five CORES (Condition of Readiness) (not related to hurricane category):

- CORE 5 – 96 hours out from destructive force winds (50 knots or greater),
- CORE 4 – 72 hours out,
- CORE 3 – 48 hours out,
- CORE 2 – 24 hours out
- CORE 1 – 12 hours out

During each CORE there are certain events triggered, such as shuttering up by facilities management. There are 4,000 personnel and 2,025 vehicles. A question was asked as to whether the 4,000 included family. Mr. McBride stated that it did include Navy personnel and their dependents but only those residing on the base not those living in civilian housing off the base. Mr. McBride further clarified that of the 2,025 vehicles; there would be approximately 100 RVs. When asked how many personnel remain, Mr. McBride stated that 90 personnel remain – mainly security, fire control and command staff; those personnel shelter at the jail. Mr. McBride stated that the RVs are ordered to evacuate at 48 hours out, following the Monroe County Emergency Management Director’s instruction. Mr. McBride stated that the 4,000 personnel/dependents will generally leave at the CORE 2 – at 24 hours. There are 890 housing units¹ generating the 4,000 personnel/dependents. A discussion took place regarding whether the model captured those personnel who live off base – it is capture by the Census and therefore included in the model. Mr. McBride was asked if the navy would evacuate at the 48 hour mark if instructed by the County Emergency Management Director. Mr. McBride responded by saying they would follow the County instructions.

A series of questions were submitted by John Hammerstrom and Don Craig. Each question will be read into the record and answered.

Question 1 Monroe County’s new “Official” clearance time is expected to be based on a computer estimate of the time it would take permanent residents to evacuate to Florida City under one of thousands of possible scenarios. Transient (tourist) units and mobile home units are currently not included in this “Official” clearance time. According to Monroe County Comprehensive Plan Policy 216.1.8, those two groups are evacuated 48 hours and 36 hours prior to expected landfall of tropical

¹ This number has since been revised as of July 13, 2012 to 912 military units, pursuant to further correspondence with Naval Air Station – Key West.

storm forced winds, respectively. It has been stated that under one reasonable scenario using the SRESP model, it takes 17 hours to evacuate the tourists and mobile homes residents. If that is so, then adding transient units and mobile homes to Keys housing stock would not affect the “Official” clearance time until they impinge on the evacuation of the permanent residents in site-built homes. **How many transient (tourist) units alone could be built without affecting the clearance time of the permanent residents in site-built homes?**

Answer: Barbara Powell answered by stating that the Department (DEO/ACSC) can model to see how many transient units can be added to the first phase of evacuation but before we take on that task there should be some community choice made as to whether hotels should be built, where those hotels will be built. There are two phases of evacuation, the first 24 hours when transients and mobile homes are evacuated and the second phase when permanent population is evacuated. If you begin to “fill up” your first 24 hours and eliminate the buffer between the two phases of evacuation, that too needs to be a community choice. John Hammerstrom stated that his concern was that a developer could argue X number of transient units would not impact the official clearance time and could be built outside the ROGO units that are allowed. Barbara Powell responded by stating that hurricane evacuation is but one factor in allowing additional units and that the community would need to consider whether additional hotels are wanted or needed. Christine Hurley pointed out that the buffer is shortened by 6 since the comprehensive plans have a policy that begins evacuation of the permanent residents at 30 hours. John Hammerstrom went on to clarify that regardless of the policy, the statute requires 24 hours. Therefore, with transients and mobile homes evacuating at 17 hours, there are 7 hours that could be filled with transient and mobile home units without effecting the clearance time that’s used to issue permits.

Question 2 How many mobile home units alone could be built without affecting the clearance time of the permanent residents in site-built homes?

Answer: Barbara Powell answered by stating that the trend on mobile home conversion is that mobile homes have been decreasing over time and there have been conversions to site-built homes. It would probably be more logical to run scenarios that would decrease the mobile home numbers and adding them into the site-built units with a ratio based on the trend. John Hammerstrom expressed concern that maybe we have created an incentive to build transient and mobile home units. Rebecca Jetton state that it may lead to a modification of the policy which is part of the purpose of the meetings. Dick Ogburn added that there is a behavioral question – typically the order to evacuate is given at a time of day consistent with people’s willingness to evacuate (normally early in the morning) to assume that people will continue to evacuate in a full 24-hour period is not realistic. The capacity to evacuate in phase 1 may not be the 24 hours in the scenarios. Don Craig added that there are Florida Building Code and local policies that restrict additional mobile homes because they could not meet the minimum wind force restriction (150 mph). Clark Snow stated that in these mobile home conversions to modular homes that

were larger, does the model take into account the increased number of people living in the modular unit. Dick Ogburn answered that the Census would account for the increase.

Mayor Worthington asked if the phased evacuation wouldn't be a call by Emergency Management to make the call about when evacuation would take place. Rebecca Jetton stated that the county had advised her that Emergency Management would not call for an evacuation at night, having the mobile home evacuation in the policy at 36 hours should be addressed at these meetings. Human behavioral studies show that people don't evacuate at night and that people in mobile homes act more like those who live in site built homes. It is her recommendation to evacuate at the 48 hour mark.

Commissioner Sylvia Murphy expressed concern that mobile home residents be considered anything other than permanent residents. The residents of mobile homes are the workforce that we rely on to close up the county (board up the homes and moving the boats to safety) and to clean up after the storm. Jodi Weinhofer stated that the transients do evacuate early – the evacuation notice goes out earlier than what is required because it is essential to notify tourists before they leave for the day's activities.

Irene Toner stated that mobile home residents are ordered to evacuate earlier because their home is not as safe as a site-built home. She also spoke about behavioral studies that indicate a disconnect between what a person says they'll do in an evacuation and what they actually do. During Georges (a high category 2) about 46% evacuated. During Wilma – we told people they don't have to worry about the wind damage but we're going to have a storm surge. We told people to move their vehicles to higher ground and evacuate – less than 10% left. The studies are not as important but you can't really predict what people are going to do. Some people say they won't leave in a Category 4 because their great great grandfather stayed in a Category 4.

The important thing for us is when a storm is 72 hours out we start our calls and evacuation of tourists and patients then mobile homes and residents. One thing to keep in mind is that our decisions are largely based on what Miami-Dade does. During Hurricane Ike, we were making decisions (Ike was a Category 4 that was predicted to go over the Seven-mile Bridge. Miami-Dade and Broward were in the cone. During the conference call with the other Emergency Management Directors, Miami-Dade and Broward said that they were going to begin evacuating their Zone A at 5:00 am. This represented 500,000 people – so the Keys evacuation decisions needed to move up in order to account for the potential for 500,000 people to begin evacuating. Irene emphasized that her decisions are based on the regional effect. The biggest fear is an escalating storm – hurricane Charley passed over the Keys at a Category 1 and was supposed to hit Charlotte County at a Category 2 – it escalated to a Category 4 in a matter of hours. Emergency Management's decision is based on the time of year, the number of residents, the number of tourists (we work closely with TDC), the occupancy of the parks. At 72 hours we are already in touch with the County and talking with the hotels, and our regional partners in Miami-Dade.

Sylvia Murphy said after listening to Irene, we need to plan for the worst-case scenario.

- Question 3** Referring to Table ES-12 - “2015 Clearance Times for Base Scenario” (Volume 4-11, page ES-27), would you please explain:
- a) **Why, for all Monroe clearance times, is the “In-County Clearance Time” 1/2 hour greater than the equivalent “Out-of-County Clearance Time?”** It is strange that a greater distance would result in a shorter time. [Aside from that, one would expect that for a Level C or greater threat, all evacuations for Monroe County are “Out-of-County” and therefore the “In-County Clearance Time” section for Monroe County should be N/A or zero.]
 - b) **Since there are more vulnerable people and shadow evacuees for greater storm threats, how can the Regional Clearance Time for Level D be the same as for Level C?**

Answer Part a) Jeff Alexander answered both parts -- The short answer is the model itself has a 30 minute indicator. When the model was run for the in-county and out-of-county clearance the results landed on different sides of the 30 minutes – time-wise there is almost no differential. As far as the In-County clearance time being zero it’s a calculation that the model makes as to populations that are (based on the behavioral analysis) going to seek shelter not necessarily outside the county – even though that’s where they’re ordered to go. The time is calculated regardless of the factors.

Answer Part b) At Level C the population leaving the Keys is not overly impacted by the overall regional evacuation and that holds true for Level D. It’s not until Level E that you begin to get other factors that affect the region clearance time. In other words, there is capacity on the roads that is not affected between Levels C & D but is affected when you get to a Level E. Tyson Smith asked to get clarification on the term “shadow evacuation” and what it was for Monroe County. Richard Ogburn explained that shadow evacuation is the population that evacuated but were not ordered to evacuate. All of Monroe evacuates for a Level C or higher, so there are no shadow evacuees. There are however, shadow evacuees in a regional evacuation scenario in Broward and Miami-Dade counties.

- Question 4** **Operational Scenarios 1, 2, 3, 4, 5 and 13 (Table ES-10, Volume 4-11, p. ES-22) assume “Miami-Dade County and Broward 24 hours after Monroe.” Does this mean 24 hours after Monroe starts their 48-hour evacuation, the full Miami-Dade and Broward evacuations for that Level are concurrent with the Monroe County permanent population evacuation? Please clarify.**

Answer: Jeff Alexander responded by stating, the calculations are based on the 24 hours when the general order is given to evacuate Monroe County.

Question 5 From Volume 4-11, page II-7, “Two sets of curves were developed, one for coastal evacuating counties that represent **lower** background traffic and one for all other counties representing **greater** background traffic [my emphasis]. The model then adjusts capacities up and down consistent with these curves as it simulates the evacuation.” Figures II-2 and II-3 indicate that during the daylight hours, background traffic for coastal counties is 1/2 that of other counties, which means that for other than coastal counties during daylight hours, only 50 - 70% of highway capacity remains for evacuation, but for coastal counties during the same hours, 80 - 90% of capacity is available for evacuation. **Why is the background traffic lower for coastal counties?**

Answer: Jeff Alexander answered by stating the background traffic for coastal counties is reduced as evacuating vehicles enter the network. So that population within the area ordered to evacuate – those vehicles, once they finalize their preparations they are no longer engaged in their routine activities and no longer contributing to background. There is a progressive reduction in background traffic during the evacuation event. The traffic is moving into the Counties that are not evacuating, thus increasing the overall traffic on those roadway networks therefore making less roadway capacity available for the evacuation. That’s how the model handles the increase/decrease for roadway capacity available for evacuation. It’s might be important to note that a coastal county that does not have an evacuation order in effect would also have the capacities of an inland county during that particular modeling session.

Question 6 The Dynamic Traffic Assignment (Volume 4-11, page ES-4) describes two curious characteristics: The “General Model Flow” indicates that one step in the flow is to “Adjust background traffic,” while the other curious statement is, “By dynamically adjusting the travel times and speeds of the vehicles moving through the network as they respond to congestion, the model is able to . . . adjust the routing of traffic throughout the network as a function of congestion as it occurs throughout the evacuation.” That sounds like the model will optimize an evacuation to generate the minimum clearance time for a given scenario, which seems to be at odds with the greater chaos of an actual hurricane evacuation. **Can you explain how this seeming “optimization” does not deliver a best-case clearance time?**

Answer: Jeff Alexander answered by stating it is not an optimization of the clearance time. What dynamic traffic assignment does is – as a roadway network becomes congested the model

simulates human behavior in that if you are confronted with extreme congestion and you know another route you will attempt to use that other route until it becomes so congested and then traffic starts to slow down across the network. Even you are attempting another route to avoid congestion – your may attempt a route that is congested. So, it doesn't necessarily optimize the clearance time what it does is try to emulate human behavior in that they will seek out an alternate route. In Monroe County it is very limited because there are very few alternate routes available to motorist.

Question 7 Volume 4-11, Page II-2 states, “All evacuations begin when an order to evacuate has been issued.” **Since our evacuation starts 48 hours prior to the expected landfall of Tropical Storm Force winds, doesn't that mean Monroe County has a 48-hour clearance time?**

Answer: Jeff Alexander answered by stating, that from the modeling perspective we calculated the scenario based on the two phases provided. How you define the phasing is a policy based question – our math was based on the different staging. Rebecca Jetton added that we think of that first phase as mitigation. Mitigation is done by trying to get some people out early.

Question 8 *“Clearance Time, Out-Of-County: The time necessary to safely evacuate vulnerable residents and visitors to a “point of safety” within the county [my emphasis] based on a specific hazard, behavioral assumptions and evacuation scenario. Calculated from the point an evacuation order is given to the point in time when the last vehicle assigned an external destination exits the county.”*
Volume 1-11 Glossary **Do we need a unique definition without “visitors?” Is “within the county” correct?**

Answer: Jeff Alexander stated that he doesn't think we need a separate definition for the vulnerable population evacuating and whether we calculate the inclusion of visitors or not. As far as, “Is within the county correct?” People do seek shelter within the county – what we are trying to determine is the last car that leaves the evacuation network either by seeking shelter within the county or leaves county – when the last one leaves the county we get this time. If we discount the “leave the county” part then you calculating the in-county clearance time. John Hammerstrom asked which calculation of clearance time applies to Monroe County if you have this one that includes the tourists in it? Jeff responded by stating that this is the definition by how the timing itself is developed – the definition for the entire state. We take the tourists out when we calculate for Monroe County. John asked for further clarification by asking when we look at an evacuation clearance time on the matrix and it's going to be label one of a few different possibilities, one of them is the “out of county” clearance time and the regional clearance time – Which one of those is applicable to Monroe County for growth management. Dick Ogburn

responded by stating that was something the Department would decide on along with this group. From our perspective, the calculation of the clearance time for Monroe County that's in the Study, the out-of-county clearance time is the measured clearance time to the county boundary because there's no assumption for in-county evacuation. Rebecca Jetton pointed out that in the Work Group notebooks, there is a letter from the Department of Community Affairs with a glossary of terms. The letter contains a "proviso." DCA will handle Monroe County somewhat differently than the rest of the state. We have a unique situation here. In the rest of Florida, when development is located in the CHHA and the local government has exceeded the adopted clearance time and a local government wants to increase their density within the CHHA they have to mitigate or they cannot increase their density in the CHHA. They may however, continue to build out platted subdivisions. In the Florida Keys, if we have exceeded the clearance time, theoretically you won't issue any more building permits for new development. We are attempting to strike a balance between public safety and private property rights. We are trying to make this software model fit the policies that you've adopted – to the greatest extent possible. If the policies don't make sense then this will be the local government's opportunity to modify those policies.

Question 9 *“Shadow Evacuation Population: Persons not affected by an evacuation order that choose to evacuate to another location they feel is safer. This population resides outside the designated evacuation zone and lives in site-built structures. The shadow evacuation population can be significant when the risk is perceived to be great.”* Volume 1-11 Glossary

The July 14, 2010 letter from DCA to DEM states, “Based on statutory authority above, we conclude that shadow evacuation is an important factor to consider when calculating clearance time. The ability to exit an evacuation zone is dependent upon the road capacities outside the evacuation zones. Therefore, the impact of all shadow evacuees must be taken into account. This should be viewed as a factor integral to determining clearance times. The percentage used to estimate the numbers of shadow evacuees **should be derived from the behavioral analyses** [emphasis added] conducted as part of the SRESP.”

Table IIIB-1: Evacuation Rate for Residents Living in Site-Built Homes – Miami-Dade County

Evacuation Rate (%)	Storm Threat Scenario				
	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5
Site-Built Homes					
Cat 1 Surge Evacuation Zone	40	50	65	80	90
Cat 2 Surge Evacuation Zone	30	45	60	80	90
Cat 3 Surge Evacuation Zone	20	25	60	80	85
Cat 4 Surge Evacuation Zone	10	15	30	70	85
Cat 5 Surge Evacuation Zone	8	8	15	55	80
Inland of Surge Evacuation Zones	5	5	5	10	20

Evacuation rate indicates the percent of residents who will leave their homes to go some place safer from each zone in each storm threat scenario. Figures are based

on the assumption that officials order evacuation for surge evacuation zones corresponding to storm category, plus all mobile homes and manufactured homes. Figures also assume that the actual storm track passes very close to the area being evacuated. Shaded cells indicate shadow evacuation – evacuation from areas not included in evacuation notices.

This appears to indicate that in a Category 3 Storm Threat, only 65% of residents in the Cat 1 Surge Zone and 60% of those in Cat 2 & 3 Surge Zones will evacuate, plus these shadow evacuees: 30% of residents in the Cat 4 Surge Zone, 15% from the Cat 5 Surge Zone and 5% that are inland of all Surge Zones. **What is the behavioral-analysis source of these figures? Would you please show where the number of shadow evacuees are accounted for in clearance-time calculations?**

Answer: Jeff Alexander stated the source data behavioral analysis were located in Volumes II and III of the Statewide Regional Evacuation Study Program. It contains the results of the statewide surveys of 18,800 residents. This was the largest ever behavioral analysis for the state of Florida. Drs. Downs and Baker from Florida State University provided much of the data and analysis for the behavioral analysis. Mayte Santamaria added that Dr. Baker conducted the behavioral analysis for the Miller Model.

Question 10 The caption under Table ES-5 “Vulnerable Population in the South Florida Region for 2015” (Volume 4-11, page ES-17) states, “Vulnerable population numbers are not inclusive . . . for example, vulnerable population listed for Evacuation Zone D does not include vulnerable population listed for Evacuation Zone C.” **Is the same true for Table ES-8 - “Vulnerable Shadow Evacuation Population” (page ES-19 - below)? Are the number of Shadow Evacuees used to calculate clearance times a summation of the current Level and all lesser Levels times the Evacuation Rates (%) of Table IIIB-1 (above)?**

Answer: They are not cumulative and should not be. The numbers are the actual numbers for each level of storm. As the storm category increases, a portion of the shadow evacuees are then included with those ordered to evacuate.

Question 11

Table ES-8 – Vulnerable Shadow Evacuation Population

	Evacuation Level A	Evacuation Level B	Evacuation Level C	Evacuation Level D	Evacuation Level E
2010					
Broward County	160,714	167,817	156,617	257,809	345,043
Miami-Dade County	206,603	172,306	194,056	251,893	450,305
Monroe County	0	0	0	0	0
2015					
Broward County	169,295	176,880	165,025	271,484	363,604
Miami-Dade County	217,855	178,334	202,928	259,579	465,523
Monroe County	0	0	0	0	0

Note: Vulnerable shadow population determined using SRESP behavioral data and county provided evacuation zones. See section E for the source of the small area data.

Building on the previous question, is the number of Miami-Dade Shadow Evacuees for a Level E, 2015 evacuation the sum all Levels, or 1,324,219, that would supplement the total Vulnerable Population from Table ES-5 of 500,275, for a grand total of 1,824,494 which is reduced by the Evacuation Rate percentages for each Zone shown in Table IIIB-1 above?

Answer: No

Question 12 Since tourist or transient units do not appear in Tables ES-4 and ES-5 “Vulnerable Population...,” it is unclear if tourists are included in clearance-time calculations. I understand that for Monroe County they are not, but are tourists included in Miami-Dade and Broward County evacuations, and if they are, where are the associated numbers shown?

Answer: Volume IV-11 contains the evacuating populations in the published studies. Tourists are not counted in the vulnerable population because this table focuses on the vulnerable *resident* population but tourists are included in the evacuating population as part of the modeling. Both Miami-Dade and Broward order “in-county” evacuations population, this would direct vulnerable populations to other parts of the county based on the direction of the emergency management director. The table simply identifies the number of vulnerable residents based on the storm category.

Question 13 With regard to the February 8 Draft MOU, assumption II b states “The Monroe County evacuation stream is the only traffic being considered by this planning model.” Does this mean that Miami-Dade’s traffic is not considered? The first paragraph of the MOU states that we will include “regional considerations.” If

that does not mean inclusion of Miami-Dade's traffic, how are regional considerations included?

Answer: If the Work Group's desire is to use the regional evacuation, then that will be reflected in the MOU.

Question 14 Draft MOU, assumption II d. "The Evacuation Level being modeled is for a Level C /Category 3 storm event." **What is the basis for this assumption?**

Answer: This is something that the Work Group will decide

Question 15 Draft MOU: Florida Statute Section 380.0052(9)(a)(2) states, "[maintain]. . . a hurricane evacuation clearance time for permanent residents of no more than 24 hours." **Since mobile home owners are permanent residents, albeit possibly in less-substantial dwellings, why aren't they included in the clearance time calculations?**

Answer: When this policy was adopted, a decision was made to evacuate the mobile home residents early. So the studies have reflected that policy choice. These meetings and the MOU process are an opportunity for the local governments to change the policies that are inappropriate. The policies predated the Statewide Regional Evacuation Study Program.

Question 16 At our January meeting, we learned that no mainland traffic from people entering the Keys to secure second homes is included in our clearance-time calculation. According to 2010 Census data and the 2006-10 American Community Survey, more than 1/3 of Keys' non-tourist dwelling units were considered vacant. Many of those are second homes that will be tended by mainland residents when a hurricane threatens. **How can that additional traffic best be accounted for?**

Answer: We are in the process of looking at the available data sets to attempt to come up with a reliable number to account for that additional traffic. Mayte Santamaria from Monroe County has provided us with data sets. Monroe County has also requested a scenario which would place the entire vacant site built units into the transient – essentially counting them as vacation rentals. This would present a worst case scenario. A question was raised as to whether there's been any attempt to quantify the number of owners of second homes that would be coming back into the county in order to ready their home for a storm. The County is attempting to study the property appraiser's data base to determine how many non-homesteaded properties have owners with

Miami-Dade or Broward addresses. Jeff Alexander stated that the model does account for background traffic and that persons coming into the County to attend to homes or boats are included in the background traffic. Jeff said that you would need to run a sensitivity analysis against the calculations that we've already made to determine whether you are impacting the assumptions that have already been made for background traffic behavior above and beyond what's already accounted for in the model. Rebecca Jetton explained that the scenarios are hypotheticals that are tools to be used in the Work Group's decision making.

Barbara Powell stated that questions 17, 18 and 19 were answered by an earlier presentation by Mr. Steve McBride of Naval Air Station Key West.

Question 20 How were the roadway infrastructure improvements to A1A and N. Roosevelt Blvd. (scheduled for 2012-2015) incorporated into the modeling efforts? What are the anticipated effects?

Answer: Ken Jeffries of the Florida Department of Transportation answered by stating that the improvements are not a capacity project. The question was rephrased to ask how the model accounts for the time that the road will be out of service for construction? The concern is that the construction would be for two years. Discussion took place among the members as to whether a 10 or 20 year allocation should be based on a reduction in evacuation capacity for a 2 year transportation project. General consensus was to not place this scenario in the priority list.

Question 21 What is the feasibility for other net, new allocations to the City of Key West?

Answer: Allocations for all local governments will be decided based upon the outcome of these meetings.

Question 22 Can copies of SLOSH Models be provided for the City of Key West?

Answer: The SLOSH model is available on the South Florida Regional Planning Council's website. There is a link to their website from the DEO website.

Question 23 How do the proposed amendments to the "Administrative Code" correlate with existing Operational Plans?

- LMS—2010;
- CEMP and associated hazard annexes;

- County;
- Municipality;

Answer: The Administrative Code referred to in the question is the set of Rules 28-18, 28-19 and 28-20 Florida Administrative Code recently adopted by the Administration Commission which direct the activities of this Work Group. David Halstead stated that it presents an opportunity to update the LMS and CEMP. Short of raising, widening or otherwise enhancing the transportation system out the Keys there is very little mitigation, other than education, available to the Keys. Once the MOU is in place, the Division of Emergency Management would expect to see it reflected in the LMS and CEMP.

Question 24 As the evacuation/clearance times are established, is there a proposed method of enforcement, for administration and/or operational plans?

Answer: The method of enforcement would be the same that is currently in place by the Emergency Management Director. Rebecca Jetton added that there is an opportunity to allow the local governments to pass a code enforcement ordinance regarding transient evacuation that would carry some penalty.

Question 25 Will the state provide indemnity for jurisdictions, and their representatives, when operational plans are activated?

Answer: David Halstead stated that during this process we will be under a Governor's Executive Order. Chapter 252 of the Florida Statutes gives the Governor and the local governments a wide-range of authority. The actions and orders that are given, provided they are lawful and meet the common sense test, would authorize the local governments to do what is needed. As far as indemnity, we have not been sued and it would be difficult for a court to look at what is done during a declared state of emergency. Richard Shine concurred with David Halstead's response.

Question 26 Is it possible for the State to include Monroe County and municipalities in future maps and presentations, beyond the 106th mile marker?

Answer: David Halstead stated that the LMS and CEMP should reflect the new data and the terms of the MOU should be taken into consideration for the operational plans, less so for the mitigation plans.

A question was asked about the ability to use reverse 911 or reverse number lookup to push evacuation information out to residents/tourists. David Halstead noted that many people no longer have traditional land lines and he is working with Craig Fugate at the Federal Emergency

Management Agency to use available cell phone technology to push evacuation information out without a registration process. A system that relies on registration would likely not have a high enough participation rate to be useful. Other tools in the process are evacuation apps for iPhones and Androids that provide information on evacuations and shelters.

Tyson Smith had stated that the MOU. We're trying to make certain assumptions to make planning policies. The MOU recognizes the assumptions about clearance times but doesn't bind the emergency management director and staff who have to make calls on the ground.

Is it possible to identify areas in the State Regional Evacuation model that are Monroe County specific? Barbara Powell responded by stating that there are numerous places in the model that are Monroe County specific, such as the behavioral study, scenarios run for Monroe – some with regional considerations (with Miami-Dade and Broward) and some were Monroe County only. It is more than 3,000 pages – we can pull the Monroe specific and post them to the website.

A presentation was made by the Florida Department of Transportation (FDOT), District 6 – Aileen Boucle, Joaquin Vargus, Ken Jeffries and Brian Wolshon, a professor of Civil Engineering Louisiana State University. Ms. Boucle explained FDOT's role as support staff for the Work Group and to provide information regarding the upcoming FDOT 5-year work plan. Dr. Wolshon gave a presentation on the maximum sustainable evacuation flow rates for US 1. Dr. Wolshon explained that research shows that flow rates recorded during evacuations were lower than those expected from Highway Capacity Manual calculation methods. Evacuation traffic flows consistently peak at rates below HCM "capacity." Flow further decreases to a level that is sustained for 6 to 8 hours or more. These flow rates are also consistent with the highest flow rates recorded during recent evacuations of the Keys and the other peak traffic periods. These flow rates may further be decreased by other inevitable congestion within the network as well as operations at night and under adverse weather conditions. Use of higher than these sustainable flow rates will also likely result in clearance times that are not realistically achievable.

Dr. Wolshon's presentation confirmed that traffic counter data is consistent with findings of behavioral research that suggests that the majority of evacuees travel during daylight hours, regardless of when an evacuation order is issued. Typically, traffic volumes increase steadily from 6:00 am to a peak in the early to mid afternoon. After a drop to a sustainable rate of flow, high travel demand continues into the mid- to late-evening, when volumes drop significantly around 10:00pm to 11:00pm and remains low during the overnight hours.

Joaquin Vargus provided information on the current maximum sustainable evacuation traffic flow rates as used in the hurricane evacuation model which range from 900 to 1200 vehicles per hour. Mr. Vargus provided a brief history of the roadway improvements in the Florida Keys. He stated that the results of the 2001 Florida Keys Hurricane Evacuation was that the 2001 roadway network was not capable of safely evacuating the Florida keys and that it requires additional

hurricane evacuation capacity. A map was shown that demonstrated there are few cars evacuating in the lower keys, 12,289 vehicles at Mile Marker 8 and building to 42,287 vehicles evacuating through Mile Marker 106. Mr. Vargus stated that the A1A improvements should not have a significant effect on hurricane evacuation. Mr. Vargus provided a map that showed the completed and funded projects. He also provided the projects in FDOT's five-year work plan.

Mr. Vargus reviewed the maps with the recommended flow rates and stated that the highest flow rates are found on the 18-Mile Stretch and a segment below Marathon around Mile Marker 40. The segments with the lowest flow rates are the four-lane segments in Key West and Stock Island, the four lane segment around Mile Marker 50 in Marathon and the four lane segment from Mile Marker 90 to 106 in Key Largo.

Commissioner Murphy asked for clarification that the lowest flow rates were on the four lane segments. Mr. Vargus confirmed and reminded the Work Group that these are "per lane" figures.

Aileen Boucle presented information regarding the 10' emergency evacuation shoulder enhancement projects. Monroe County BOCC passed resolution 475-2008 supporting a northbound shoulder width no greater than 4 feet from Mile Marker 93 to Mile Marker 106. The FDOT plans that were developed contained plans with and without the 10' shoulder. FDOT awaits the recommendations of the Work Group and their recommendation. The City Commission of Key West passed resolution 08-13 supporting FDOT'S improvements from Mile Marker 93 to Mile Marker 106 for 10 foot shoulders.

Both behavioral analysis and traffic counter data in the Florida Keys and throughout the state were utilized to conclude that people prefer to evacuate during daylight hours. The data is included in the Statewide Regional Evacuation Study Program (SRESP). A question was asked if this data has been correlated to the times that evacuation orders were given and Dr. Wolshon responded that it had not. However, the time of the evacuation order is shown on the graphs that are in the SRESP. He stated that the data is so consistent that you can see the pattern of evacuation is during daylight hours. As a follow-up, a question was asked if any of the improvements such as turn lanes, changing traffic lights to flashing, etc. were used to evaluate the flow rates. Mr. Vargus stated that yes they were taken into consideration and simulation work was performed that evaluated effectiveness of changing the traffic signals to flashing and it validated the data that was used in the SRESP. A question was asked regarding the reasoning behind Miller Model's method of evacuation of hotel units. Mr. Vargus verified that "For the purposes of this study, (the Miller model) traffic generated by hotels and other tourist units were included in determining clearance time rather than discounted because they will be required to evacuate early. According to the Director of Emergency Management Operations for Monroe County and others, not all hurricanes approaching the Keys will be considerate enough to provide ample time for advance tourist evacuation."

A question was asked about whether or not evacuation through the airport (increased flights) was taken into account when determining the number of cars that evacuated from the Keys. Richard Ogburn responded by saying that there were no adjustments made for the assumption that people would evacuate by means other than a vehicle on the highway. Another question was asked as to how the number of 40,000 vehicles was determined. Dick Ogburn stated that it is a calculation based on the total number of dwelling units (separating site-built, mobile homes), for each of those we have an estimate of the number of people and the number of vehicles that are available for each type of unit. The vehicle usage rate is then calculated for occupied dwelling units. For example a household that has 3 vehicles may only evacuate with one of them. Commissioner Teri Johnston expressed concern that the number of vehicles shown for Key West was high and many households in Key West (10%) do not have cars. The numbers in FDOT's presentation were from the 2001 Study which used 1990 Census data. The SRESP vehicle numbers were based on 2000 Census data brought current with building permit data.

Councilman Don Achenberg noted that in the discussion regarding the 10' wide evacuation shoulders there was no mention of what happens when you squeeze two lanes in to one on the bridges and still maintain a flow rate. Joaquin Vargus answered by stating that all the bridges from Marathon north have shoulders on both sides and there is sufficient room on those bridges to allow for two lanes of evacuating traffic and a southbound lane if the lanes are delineated. There was a discussion regarding the constriction that occurs around the 7-Mile Bridge. Mayor Pete Worthington asked if there had been any consideration of mass transit to the shelter at FIU. Aileen Boucle responded by stating no consideration has been made up to this point, but FDOT can research the feasibility if that's the recommendations of the Work Group. Mayor Worthington asked if the flow rates have been confirmed using traffic counts from actual events. Mr. Vargus confirmed that they were utilized. A question was asked about where the four traffic counters in the Keys were located. Mr. Vargus stated that they were located at Mile Marker 4, Mile Marker 106, one in Marathon and one in Big Pine Key. Aileen concluded the FDOT presentation by stating that the presentation will be posted on the DEO website and the chart with the maximum sustainable flow rates is contained with the presentation.

Bob Shillinger of the Monroe County Attorney's Office gave a presentation on Property Rights and Hurricane Evacuation. He began by covering "takings law" and their foundation in both the US and Florida constitution. He explained that there are different types of takings claims,

- a direct taking which is when the government takes your property for some public purpose, i.e., school, park, etc.
- inverse condemnation – the government's regulation has affect the taking all use of the property
- Bert J. Harris Act which is a variant on the inverse condemnation

He stated that the Supreme Court has defined a taking by, “Where a government agency, by its conduct or activities, has effectively taken private property without a formal exercise of the power of eminent domain” There are five basic types of inverse condemnation: facial taking, temporary taking, as applied taking, exaction, and physical occupation.

Facial and as applied takings are the two most applicable for hurricane evacuation. A facial taking is generally defined as mere enactment of regulation precludes all development of property and owner is deprived of all reasonable economic use of property and it’s clear from the text of the regulation. The claim would immediately ripen and the claim would run for four years until the statute of limitations is reached. An example of a facial taking would be: no more ROGO units, no other changes.

A temporary taking is when there is a moratorium. There is no bright-line rule for duration. In the Tahoe-Sierra case the Supreme Court held that a 32-month planning moratorium was not a temporary taking. It has to be a complete prohibition on development. If you have other uses of the property, it is not a taking. The statute of limitations starts to run when the moratorium is lifted.

“As applied” takings claims are ones most used in the Keys. An as “applied taking” occurs when the application of a regulation to property denies substantially all reasonable economic use. The claim requires at least one denial of a meaningful building permit application. There are the Penn Central factors which require a reasonable investment backed expectation as well as the economic impact on claimant. The statute of limitations runs from a final denial of that meaningful application.

Economic Impact factor: requires evidence on the change in fair market value (FMV) of the property caused by the regulatory imposition. For example the comparison of

- a) FMV of the property with the complained of regulation as of alleged date of taking and
- b) FMV of the property without the complained of regulation as of same date.

Owner may be denied highest and best use of property. For example, remaining “ROGO lot” value (the value of a lot for donation to increase points in ROGO) of vacant property has precluded finding of takings.

An exaction is a restriction on using private property for public benefit. There are two question to ask to determine whether it’s unconstitutional. 1) Is there an essential nexus between legitimate state interest and permit condition? 2) Is the permit condition proportional to projected impact of the proposed development? In the context of hurricane evacuation, an example of an exaction would be conditioning new ROGOs on purchasing too many additional lots. It would need to be need to be proportional to impact of development.

A physical occupation taking usually occurs during temporary and emergency situations and it is occupation without prior permission. A classic example is flooding of fields to handle storm water. In the context of hurricanes examples include: evacuation or return holding areas, temporary shelters and command posts, post disaster supply depot, debris collection and processing sites.

The typical defense in takings cases include: there is no taking, statute of limitations, and third party liability. A no taking defense is made when it's proven that there are:

- Other economically viable uses
- No reasonable investment backed expectations
- Owner opting not to recoup initial investment in face of increasing regulatory limitations
- Nuisance
- Development expectations not defeated by government regulation

Nuisances are not compensable takings. Nuisances include those uses of property that are threats to public harm and welfare. Is the threat to public safety once there is no ability to safely evacuate the County in event of a hurricane a nuisance? Mr. Shillinger stated he could find no case related to hurricanes. Most cases point to nuisance that are specific to a property.

Statute of Limitations runs four years from the date of accrual. Laches is a similar type of claim to that of the statute of limitation when you talking about equitable claims, but there is no set time limit. A no taking defense is made when it's proven that the claimant has waited too long.

- A ripeness defense is use when it can be proven that there has been:
- No meaningful permit application with governmental entity being sued
- A failure to apply for permits from other governmental entities that could oppose development
- A failure to Exhaust Administrative Remedies, such as the Beneficial Use Determination (BUD Process) or the Administrative Relief process

A third party liability defense demonstrates that there is a superior sovereign responsible, such as state or federal governments. It is also used when a non-governmental agency such as a home owners association prevents the use of the property.

There are potentially two trials in a takings claim. The first phase is the liability phase which determines whether there has been a taking. This is done by means of a bench trial before a Circuit Court Judge and only the landowner has the right to appeal if he loses. The second phase is the damages phase which determines how much is owed. This is determined by a 12 person jury and can be appealed by either side.

A Bert J. Harris Act claims is a statutory remedy adopted in 1995. It applies when a government action “inordinately burdens” an existing use or a vested right to a future use. It excludes temporary takings less than 1 year and enforcement of federal regulations. In these cases there is often an opportunity to settle by modifying regulation. The orders on liability are immediately appealable. The Bert J. Harris Act is modifiable by the legislature and governor.

On the question of build-out, there are approximately 8,800 parcels of privately owned property in the unincorporated area of Monroe County. Under the current rule there are 197 County ROGO allocations per year. $197 \text{ ROGOs} + \text{number of lots purchased} = \text{number of potential takings cases resolved each year}$. The trend in land acquisition shows that since 1994, government agencies (federal, state and local) bought 340 parcels per year. In the last 5 years, government agencies bought 156 parcels per year and in the last 3 years government agencies bought 67 parcels per year. At the current rate this leaves 33 years of ROGO. Reducing the ROGO rate alone will not solve the problem. The current rate $(197 \text{ ROGOs} + 67 \text{ acquired}) \times 5 \text{ years} = 1,320$ this would leave 7,480 lots to purchase. A 50% in the annual allocation reduction leaves 7,140 lots left to purchase and a 25% reduction leaves 6,480 lots to purchase. If you use the strategy of land acquisition – you must have a willing seller. If you apply the current rate of ROGO and 100 purchases a year for 5 years there are 7,315 lots to purchase. Reduce it by 50% and it leaves 6,810 lots to purchase. Reduce it by 25% and it leaves 5,820 lots left to purchase.

In order to get to zero lots at the end of a 5, 10 or 20 year period, you would need to purchase 1563, 781 and 391 lots per year respectively. Some options to consider as we approach a 24 hour evacuation time are to: slow rate of growth, increase purchases, reward land dedications and lot aggregations in the building permit allocation system, allow for the transfer of ROGO rights or encourage other uses that don't impact hurricane evacuation. Takings law is case law driven case law changes over time – what may be a taking today may not be a taking tomorrow.

Commissioner Carruthers asked how many of the 8800 lots are in ROGO and nearing ripeness. Christine Hurley stated that she did not have the figure but that approximately 4,000 parcels are designated Tier III. Mr. Shillinger clarified that Tier III lots are parcels where the County wanted to encourage development. A question from the audience regarding what the cost of land acquisition in the last 3 years. Mr. Shillinger responded by stating that the land authority purchases land at 1986 values. Most lots are purchased at approximately 10,000-20,000. The state makes purchases at fair market value which is far greater than the land authority. Mr. Shillinger clarified that the 8,800 lots and the allocations used in his presentation were just unincorporated Monroe County and included commercial lots. Ms. Jetton pointed out that Marathon just won a takings case (Bamboo Key) and asked about the cost of defending takings cases. Mayor Worthington did not have the figures available for that case but said that they settled the Boot Key Island and it cost \$3 million plus attorney's fees of \$275,000. Mr. Shillinger said that depending on the case they have spent six and sometime seven figures defending a takings claim. A typical expense for defending a takings claim for a single family home/single family lot is around \$50,000 to \$100,000 if you're paying for outside counsel,

property appraisals and if you lose the legal fees for the plaintiff. The question was asked as to why isn't it cheaper just to buy the lot? Mr. Shillinger explained that you have to have a willing seller. Don Craig asked if the transient moratorium had gone long enough to establish that it was a taking. Mr. Shillinger stated that the recent case in which that was alleged, The Good case, could not overcome the fact that the owner still had residential use on the property. The moratorium doesn't prohibit all development – just transient development.

Rebecca Jetton reviewed the memorandum of understanding (MOU). Ms. Jetton directed the participants to page three of the MOU. She then asked those present to participate in a “straw poll” to gauge the positions relative to the variables/terms contained in the MOU. The decisions made must be legally defensible. The first variable to decide on is the participation rate. The occupancy rate of both hotels and site-built residential is another variable. The previous modeling runs have used hotel occupancy of 85%. As a result of these meetings DEO has been asked to update the model using data from Smith Travel regarding actual hotel occupancy. Under assumptions, DEO chose a 12 hour response curve as recommended by the Division of Emergency Management. We will also need to decide whether we will use a Monroe only evacuation run or a regional run that includes Broward and Miami-Dade. We have already adopted into the Florida Administrative Code that the termination point for evacuation is the Turnpike at Florida City rather than the shelter at FIU. Only 3% use the shelter. Another MOU decision is what level of storm are we modeling for – a Category 3, 4 or 5. The road capacity has already been decided by the Florida Department of Transportation. Ms. Jetton reviewed the “straw poll”. Don Craig asked if the Department is saying that Key West is entitled to 90 allocations. Ms. Jetton stated that 90 is what Key West originally had and that Key West is entitled to an allocation which will be decided as part of this process. Don Craig asked if the Smith Travel numbers were during a particular season. Ms. Jetton stated that they were annualized numbers.

John Hammerstrom asked to make a case for public safety before the poll is taken. He began by stating that there are 66,000 dwelling units in the Florida Keys and we're eliminating roughly a third of those by not counting the tourists and the mobile home dwellers, so you're down to 44,000. Another third will be eliminated because they're not occupied. He continued by reading quotes from James Franklin which spoke to the inability of the weather service to predict rapid intensification of storms or storm structure or size (which determines surge). The comprehensive plan policy is based on the ability to predict where and when tropical storm force winds will arrive but we're basing the need to evacuate on storm surge. The 2012 SRESP made 50 different scenarios of those 50, 42 of them exceeded 24 hours. There were no scenarios in the Category 4 or 5 that were under the 24 hours. Four of the scenarios that generated a time of less than 24 hours were for a Category 1 hurricane. The draft MOU chose scenario 8A – the one clearance time that was the least of the 50. Using the best case is statistically invalid, intellectually dishonest and dangerous. The early study made the clear statement that tourist should be included in the evacuation because we will not always have the luxury of 48 hours. Mr.

Hammerstrom's presentation continued by stating that whenever the 24 hour limit has been reached in the past, the rules were changed. He concluded his remarks with stating that if this group doesn't determine that we've reached build-out, no group ever will.

A question was asked how timeshares were handled in the model. Transients are only those that are registered through Department of Business and Professional Regulation (DBPR). The Census Bureau has inventoried approximately 52,000 to 53,000 site-built units. Of the 13,000 to 14,000 identified as transient units by DBPR about half of those may overlap with the units identified vacant dwelling units by the Census Bureau. So simply adding the units may not present an accurate total. Mr. Hammerstrom stated that his point was that for the built units we are discounting a substantial percentage for participation rate, occupancy and earlier evacuation.

Denise Worling who worked as a Census taker spoke briefly about how the Census counts vacancy. She began by stating that the Census count the structure where you are residing as occupied. If you have a seasonal home that may be occupied eleven months out of the year – the Census considers these vacant-occupied occasionally. Unless there is a separate address for a legal or illegal apartment, duplex, etc. those units were counted as a single structure. Homesteading the property has no effect on the Census count. Commissioner Carruthers asked for clarity about how multi-family housing was counted. Ms. Worling responded by stating that if the units within the multi-family had separate addresses then they were counted.

Christine Hurley stated that Monroe County had requested scenarios that included 30% of the vacant units be placed on the transient side of the evacuation phase. Mr. Hammerstrom stated his concern that if we do not issue any new permits but the vacant units become occupied with permanent residents we will be over the 24 hour evacuation time. Jodi Weinoffer stated that the occupancy rates in the summer are quite low and tourists leave well before the 48 hour time-frame.

Barbara Powell announced that the next scheduled meeting may be postponed until the end of April. The model is being updated to reflect the most recent Census data and the scenarios will not be ready by the next scheduled meeting.

The consensus exercise was performed and after a short break the meeting concluded with public comments.