Project	**IEEE 802.16 Broadband Wireless Access Working Group <http://ieee802.org/16>**	
Title	**Fixes for Network Entry Flow Charts**	
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Re:		
Abstract	Fixes for Network Entry Flow Charts in 802.16e	
Purpose	For the review in 802.16 Maint TG	
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Fixes for Network Entry Flow Charts

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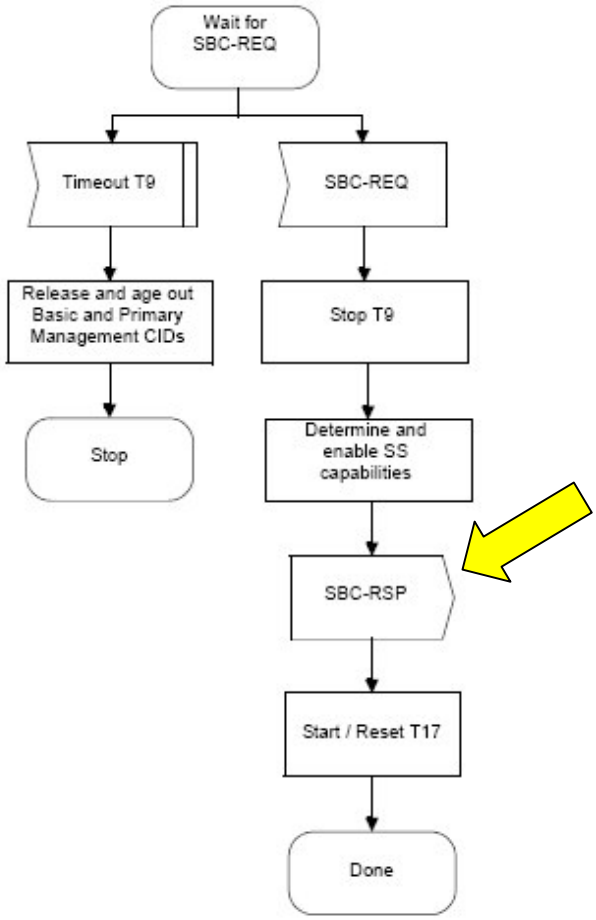
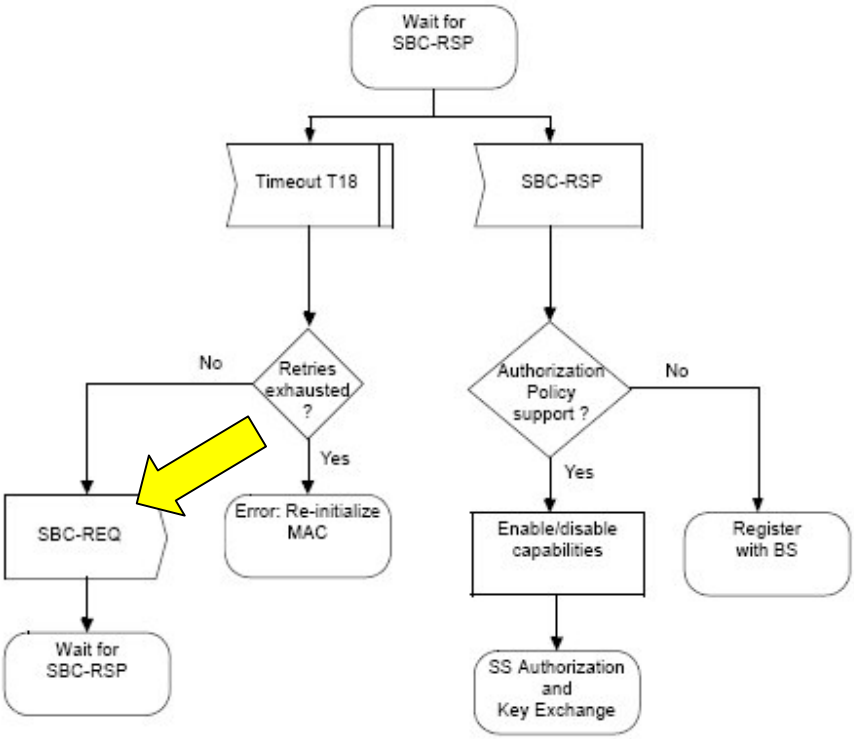
1. Problem definition

The following problems were identified in SBC and REG transactions:

1. There is an unclear definition of how to handle expiration of T9 in the BS side in SBC transaction, and expiration of T17 in the BS side in REG transaction. The condition for "Release and age-out connections" is unclear and not well defined. In addition, this action is local to the BS and thus remains unknown to the SS. We suggest that the BS would send unsolicited RNG-RSP message with Abort instruction when these timers expire.
2. The current Network Entry flow chart cannot handle retransmission, either due to processing delays or message drop. After the BS transmits a response message, it will proceed directly to the next state in the Network Entry flow and thus cannot handle a retransmission of request by the SS; this would cause the Network Entry procedure to end in failure. For example, the following flow chart (Figure 67 in 802.16e-2005) shows that BS sends SBC-RSP.



If the SS does not receive SBC-RSP within T18 timeout, it will retransmit the SBC-REQ (Figure 66).



However after sending SBC-RSP, the BS proceeds directly to the registration step. The corresponding flow chart (Figure 70) does not contain any state where a retransmission of SBC-REQ can be received and processed. This is just an example of one single scenario. Similar failures can be identified for other steps in the entire Network Entry flow.

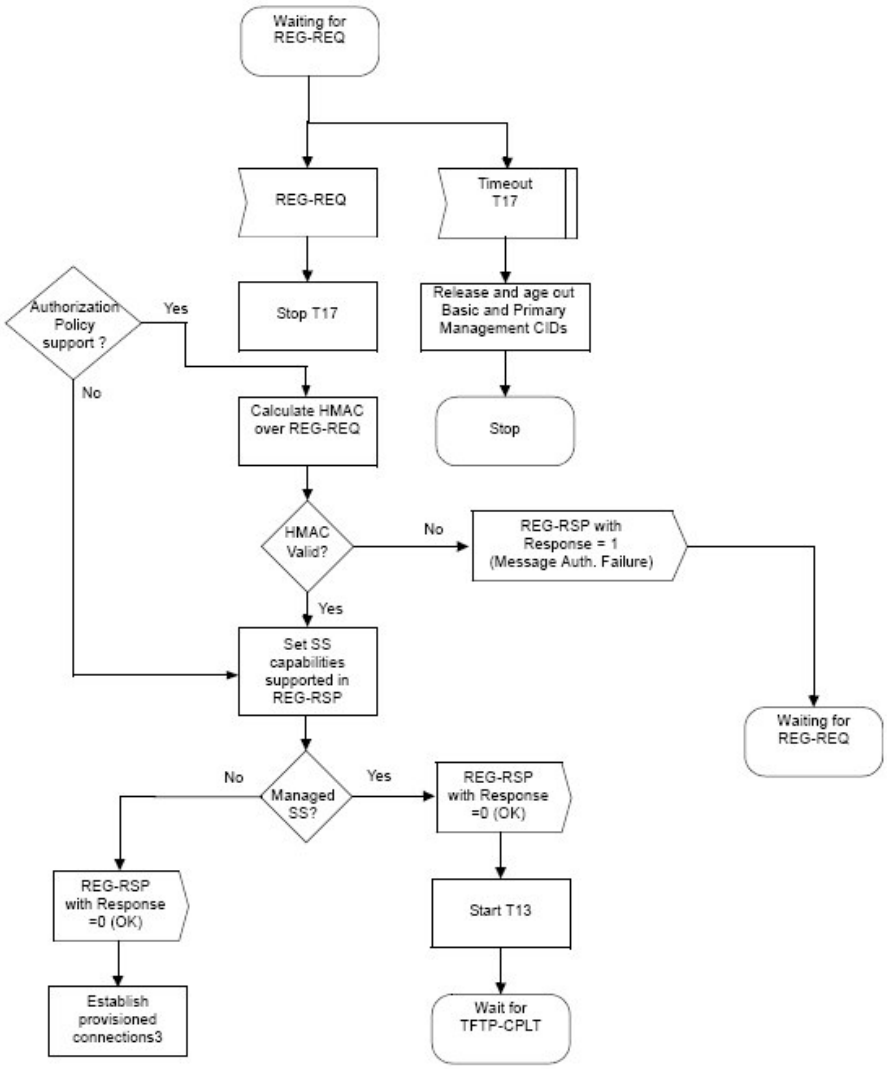


Figure 70—Registration—BS

We suggest the Network Entry process be specified using 1) Network Entry state machine, and 2) set of actions/procedures of handling the Network Entry messages. This will provide a clearer definition of the network entry procedure as well as the handling of error/failure conditions.

Suggested remedy:
Replace Figure 67 in 6.3.9.7 with the following figure:

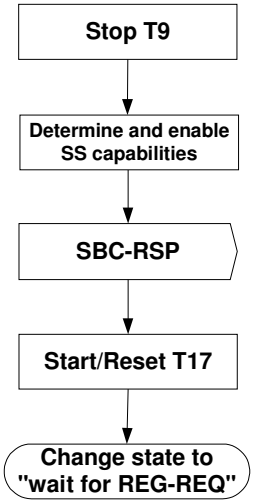


Figure 67-Handling SBC-REQ

Replace Figure 68 in 6.3.9.9 with the following figure:

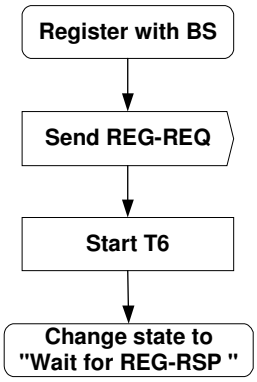


Figure 68 – Registration – SS

Replace Figure 70 in 6.3.9.9 with the following figure:

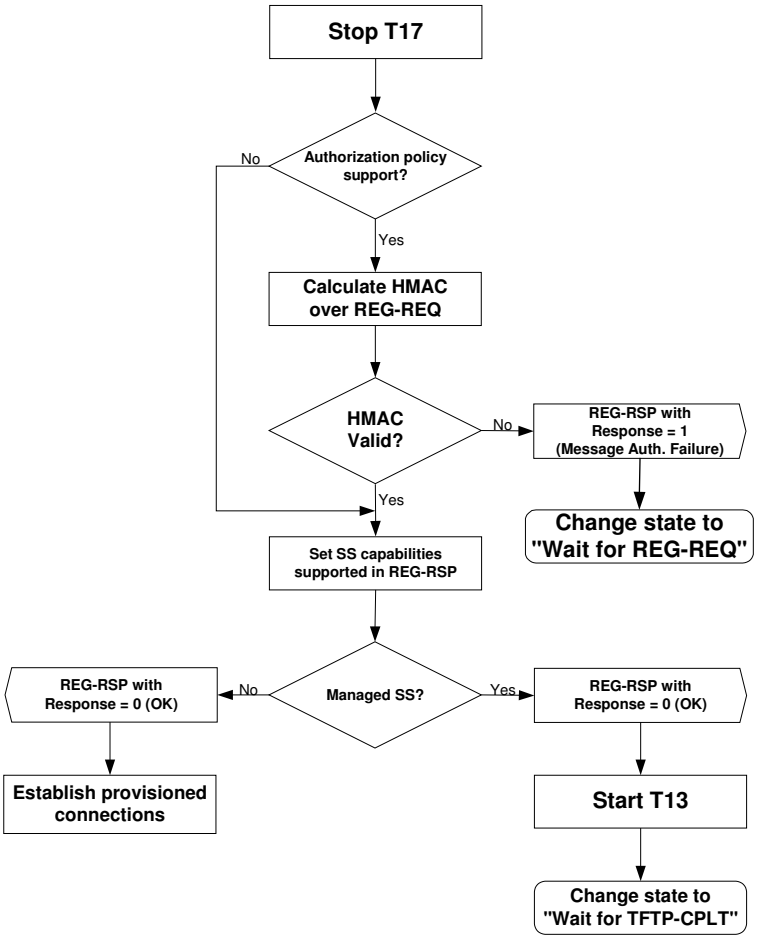


Figure 70 – Handling REG-REQ

Replace Figure 66 in 6.3.9.7 with the following figure:

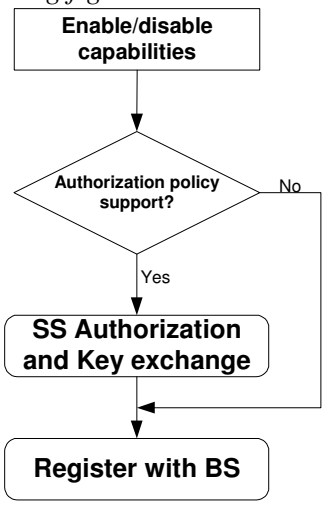


Figure 66 – Handling SBC-RSP

Add the following Figure:

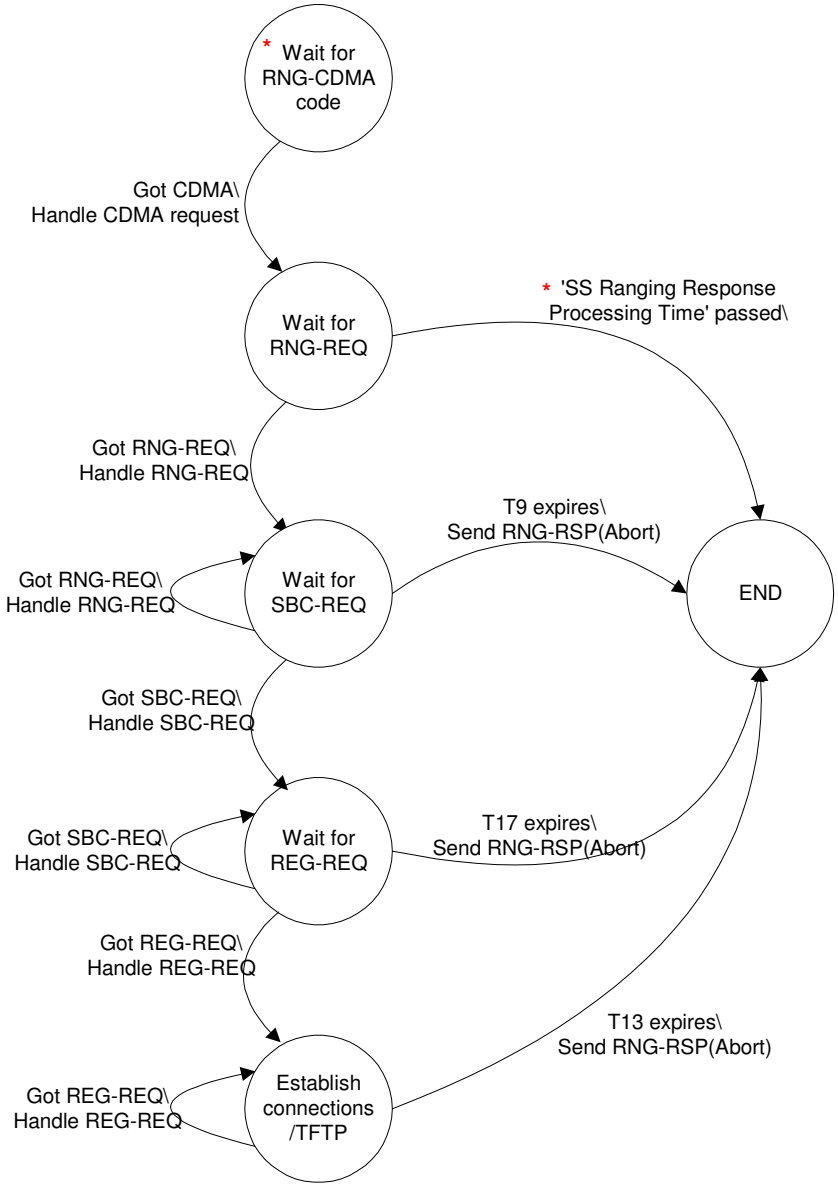


Figure X – Network entry state-machine BS side (Applies only to OFDMA)

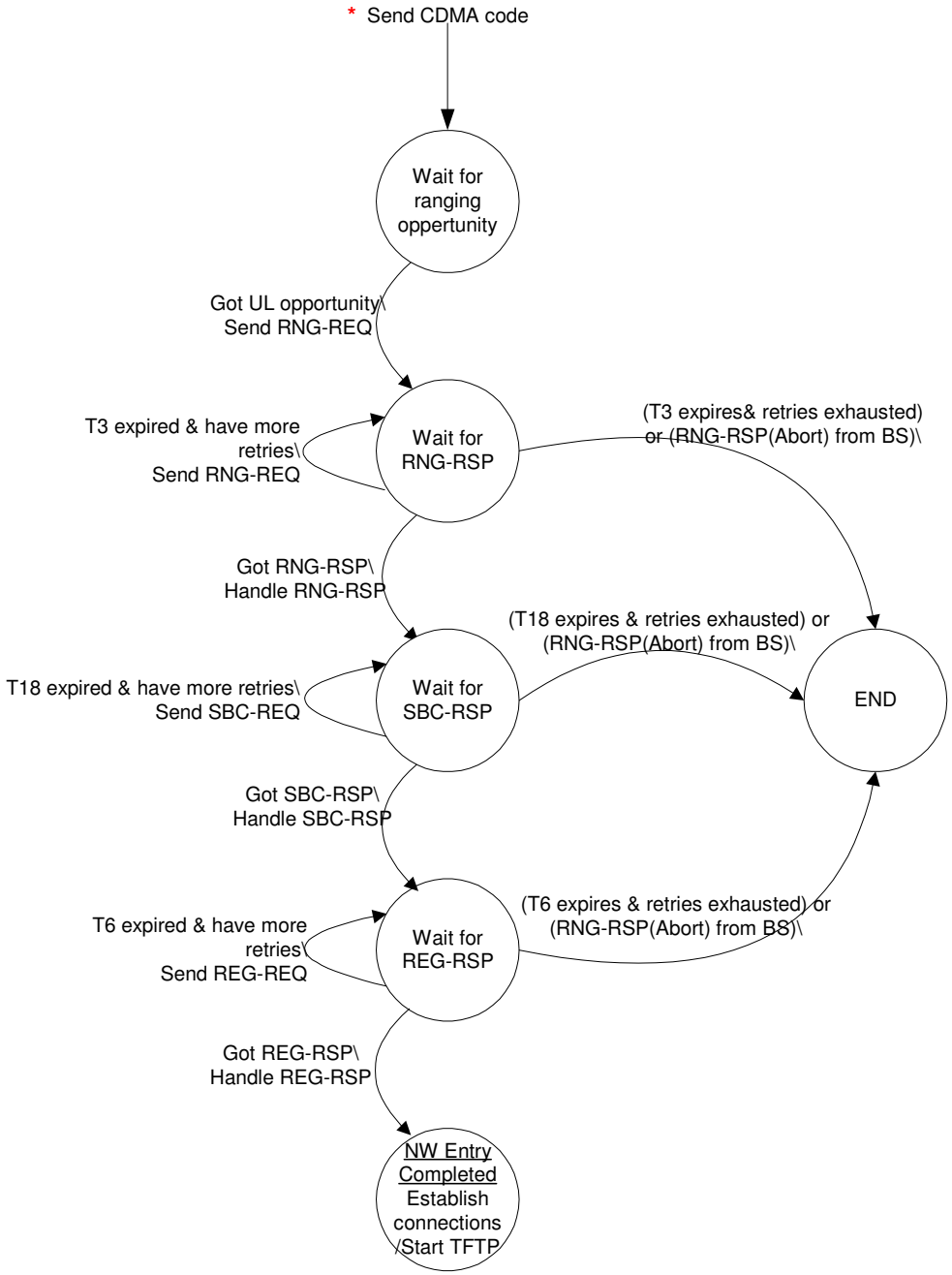


Figure Y – Network entry state-machine SS side (Applies only to OFDMA)