Rationale for Amending A/53D, Annex C, via changes documented in PS-661r3

PS-661r3 was developed to create a standard way to transport program elements via E-VSB. During the development of the standard for this additional capability, the potential impact to legacy receivers (those that simply discard E8-VSB packets) was assessed and provisions to protect them were added. The approved (and on publication hold) Amendment to ATSC A/65 (PSIP) makes normative reference to terms defined in this draft. PS-661r3, when combined with the E-VSB transmission specification in Annex D, enables implementation of a basic E8-VSB capability. The form of a replacement annex was chosen as many changes were needed throughout the draft, and the resulting mark-up would have been difficult to read.

More specifically, this document contains proposed changes to A/53E, Annex C to add support for transport of MPEG-2 coded video (per A/53C Annex A), and either AC-3 or E-AC-3 coded Audio (per A/52B using techniques defined in A/53C, Annex D [Enhanced 8VSB]). The program element support includes constraints for services designed to provide replacement audio and/or video in the event of loss of the main VSB reception. It specifically permits and constrains still picture and low-delay MPEG-2 video when delivered using E8-VSB.

PS-661r3 establishes constraints on the multiplexing and time stamping of transport stream elements not sent using E8-VSB packets that were deemed necessary so that when E8-VSB packets are being used, there would be no impact on legacy receiver operation using the non-E8-VSB-delivered content. As the data delivery rates over E8-VSB are expected to be significantly lower, a need to relax the timing constraints for the Program Specific Information was identified, and the new tolerances are defined.

Multiple E8-VSB implementation approaches were identified during the development process. The complexity of drafting a standard that allowed each (and others not yet envisioned) became quite high. It became clear that an approach was needed that was implementation independent, and the example set by MPEG-2 in this area was followed.

A buffer/decoder model that is an extension of the MPEG-2 reference decoder model that retains all requirements established by the MPEG-2 reference decoder model was developed and documented. The draft provides the transmission constraints by requiring the Transport Stream to be constructed so that the specified zero-processing-time-decoder model can process all transport stream elements. The draft defines names for portions of the Transport Stream based on the transmission mode for which they are intended.