58. This product differentiation between Sirius and XM also supports a broader market definition when it is coupled with the fact that the companies have not been able to charge supra-competitive prices. Suppose that one were to assume that satellite radio is a separate market, distinct from other forms of audio entertainment. In this alleged duopoly "market," in which the duopolists have highly differentiated products, one also would expect that they would have been able to enjoy substantially high margins. **[[REDACTED** [redacted]]]. The firms' $7 billion in losses as of 3Q 2006 certainly raise questions about their ability and incentive to insulate themselves from competition with other audio entertainment devices.[124]

2. Product Differentiation Between Satellite Radio and Other Audio Entertainment Modes

59. Comments opposing the merger tend to downplay the differentiation between XM and Sirius and instead focus only on the differentiation between satellite radio and other audio entertainment modes. The latter differentiation is not strong enough to justify a narrow satellite radio-only market definition. Perfect substitution is not required for two products to be in the same relevant market. A set of imperfect substitutes can provide a highly significant constraint on a product. For example, various AM/FM radio stations are not perfect substitutes for advertisers because they all have slightly different demographics but they still act as competitive constraints on each other.

60. Some Comments suggest that satellite radio and terrestrial radio are in separate markets because satellite radio depends predominately on subscription revenue, whereas terrestrial radio earns advertising revenue.[125] However, the use of different "business models" does not imply the absence of listener substitution between terrestrial radio and satellite radio or that such substitution to terrestrial radio would fail to deter the exercise of market power by a merged XM and Sirius. Listeners are not concerned about "business models" and they do substitute between satellite radio and AM/FM, as discussed earlier. If Sirius and XM were to raise their subscription prices, fewer people would choose to subscribe because of the variety of other alternatives available.[126]

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[124] For losses to date, *see* Goldman Sachs, *Conundrum squared: Why XM and Sirius Should Wait* (February 11, 2007) at Exhibit 10.

[125] *For example, see* Sidak-I at 26.

[126] *Cf.* NAB Petition at 15 ("the conclusion that local terrestrial broadcast radio is not a substitute for satellite DARS in the *national satellite DARS market* is not inconsistent with a conclusion that satellite DARS is a substitute for local terrestrial broadcast radio in the separate (and broader) *local audio market.*") The NAB states the economic proposition exactly backwards. The fear of *subscriber substitution* from satellite radio to terrestrial radio would constrain the ability and incentive of the merged firm to raise price profitably. But, the fear of *advertiser substitution* from terrestrial radio to satellite radio likely would not be sufficient to constrain the ability of a terrestrial radio advertising cartel to raise price profitably. XM and Sirius have few listeners and little advertising,

61. *The same analysis of substitution applies to claims that satellite radio belongs in a separate* market from terrestrial radio because satellite radio is mainly limited to national programming, whereas terrestrial radio is mainly local. This does not make economic sense. Listeners value local as well as national content. The inability to offer much local programming is a disadvantage, not an advantage. As discussed above, the fear of substitution to terrestrial radio clearly would constrain the ability and incentive of the merged firm to raise its subscription price. Terrestrial radio carries national as well as local content, and listeners may choose between the national and local content that is broadcast. Moreover, terrestrial radio stations are not significantly constrained from increasing the amount of national content above the current level. Companies like Clear Channel serve multiple local areas. Networks can broadcast the same content around the country. In addition, national content is syndicated and sold to stations nationally.[127] For example, we understand this is done with programming like The Rush Limbaugh Show and American Top 40. That is also the way the Howard Stern programming was sold before he moved to Sirius. There are companies that specialize in arranging nationally syndicated distribution.[128]

62. The NAB suggests that satellite radio is a separate relevant market because it is the only source for "a multi-channel, mobile audio service that is available as the consumer travels anywhere in the country."[129] There are several problems with this rationale for defining the market. First, this analysis ignores the fact that, for example, the Classic Rock radio station in one area probably is a pretty good replacement for the Classic Rock in another area for a motorist traveling around the country. Second, very few potential satellite radio subscribers actually travel around the country enough to justify paying $13 per month for radio service. This product characteristic might be highly salient for long distance truckers, but less important for most others.[130] Third, it would not be surprising if satellite radio

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relative to terrestrial radio stations. But, the issue here is not collusion in the advertising market. It is whether an increase in the price of satellite radio would lead to subscriber substitution – fewer consumers subscribing to satellite radio and more current subscribers terminating the service. In that arena, there is substantial scope for substitution from satellite radio to terrestrial radio.

[127] For a similar point, *see* Comments of Edwin Meese III, The Heritage Foundation, *and* James L. Gattuso, The Heritage Foundation, MB Docket No. 07-57 (July 9, 2007) at 3.

[128] One example is Westwood One. *See generally* Westwood, *Form 10-K* (2006), *available at* http://images.westwoodone.com/images/pdf/Investor-Relations/PFBNY31158_4_0828.PDF (last visited July 20, 2007).

[129] NAB Petition at 12; *see also* Sidak-I at 27 *and* Sidak-II at ¶26.

[130] [[REDACTED [redacted]

penetration were higher for truckers. Sirius and XM have channels targeted at truckers. But, neither Sirius nor XM price discriminate against truckers now, and such price discrimination would be highly unlikely after the merger.

63. Some Comments argue that satellite radio is a separate market because satellite radio offers commercial-free music channels and listeners dislike ads.[131] Surveys indicate that commercial-free programming is a relevant attribute for many satellite radio subscribers.[132] However, while many subscribers may value commercial-free programming, many more consumers have not valued it enough to pay for satellite radio, and many who have subscribed likely do not value it enough to pay significantly more than they do now. In particular, survey evidence indicates **[[REDACTED** [redacted]

[redacted]]]. Sidak relies on empirical evidence from a Wilson Research Strategies survey. Sidak-II at ¶¶24-27. The Wilson survey reports a much higher number – 77% of subscribers cited uninterrupted signal nationwide as an important reason for subscribing. Wilson finds higher numbers for the importance of several satellite radio attributes than do company surveys. The XM and Sirius surveys were commissioned for use in the normal course of business, in contrast to the Wilson survey, which was commissioned by the NAB for use in this proceeding. Too little information has been provided about the questionnaire or methodology of the Wilson survey to analyze why it found results that differ substantially from those of the companies' surveys.

[131] *For example, see* Balto at 2. *See also* Sidak-II at ¶26; C3SR Petition at 6; NAB Petition at 14 ("it is significant that terrestrial radio is a free, rather than subscription, service.") Sidak-I asserts that terrestrial radio is an inferior product to satellite radio because listeners have to pay a cost for terrestrial radio by listening to commercial advertisements. He measures the "cost" by the listener's wage rate. Sidak-I at 26. This analytic approach is unconvincing because it leads to very unreasonable results. Assume that a typical person listens to terrestrial radio just 10 hours a week and there are 8 minutes of commercials an hour). In this scenario, the "cost" of listening to commercials for a person earning $20/hr (or about $40,000) a year would be 33 cents per minute, or about $110 a month. Even for someone earning $10 an hour, the "cost" by Sidak's measure would be about 17 cents a minute or $55 a month. Since satellite radio only costs $12.95 a month, Sidak's methodology would imply that nearly everyone that earns $10 an hour or more and listens 10 hours a week would choose to subscribe choose satellite radio – paying the lower "price" for what Sidak claims is a much broader service. In fact, about 230 million Americans listen to terrestrial radio each week, while there are only about 14 million satellite radio subscribers. More recently, Sidak has proposed a different ad hoc approach to determining the value of avoiding commercials, as discussed below. Sidak-II at ¶¶43-44.

[132] For example, **[[REDACTED** [redacted]]]. The results reported from the Wilson survey prepared for this proceeding finds that a substantially higher proportion of subscribers (i.e., 87%) place a high importance on commercial-free music than do XM and Sirius surveys, such as those cited here and later in this paragraph. Sidak-II at ¶26.

[redacted]]].[133] This lack of importance to most subscribers also can be seen directly from listening data as both services have very popular channels that carry commercials. **[[REDACTED** [redacted]]].[134] In addition, Sirius has a number of other highly rated advertiser-supported stations. **[[REDACTED** [redacted]]].[135] **[[REDACTED** [redacted]]].[136]

64. Moreover, consumers who prefer commercial-free listening have other listening alternatives. Listening to CDs and most content on MP3 players would be commercial-free, including subscription services like Rhapsody and Napster, content from services like the Apple iTunes Store, and some podcasts. In addition, there are about 1350 radio stations currently broadcasting in HD, including more than 600 HD2 channels that now offer commercial-free content, and these figures are increasing rapidly.[137] Finally, as discussed earlier, encryption technology for HD radio would make it possible for HD radio stations to be provided on a commercial-free subscription basis.

65. Some Comments argue that satellite radio is a separate market because satellite radio has higher quality sound than AM and FM.[138] Some satellite radio subscribers have a strong preference for higher sound quality but many do not. And, customers with that preference are not limited only to satellite radio. They also can obtain superior sound quality by listening on CD players, iPod/MP3 players and wireless phones connected to an auto sound system or a high quality headset. According to company surveys, **[[REDACTED** [redacted]

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[133] **[[REDACTED** [redacted]]].

[134] **[[REDACTED** [redacted]]].

[135] **[[REDACTED** [redacted]]].

[136] **[[REDACTED** [redacted]]].

[137] HD Radio Alliance Press Release, *Best Buy Expands HD Digital Radio Line-Up at All Stores Nationwide* (April 23, 2007), *available at* http://www.hdradio.com/press_room.php?newscontent=86 (last visited June 11, 2007). *See also* iBiquity, *Find a Station, available at* http://www.ibiquity.com/hd_radio/hdradio_find_a_station (last visited June 7, 2007).

[138] *See* AAI Comments at 22; *Petition to Deny of Common Cause, Consumer Federation of America, Consumers Union and Free Press*, MB Docket No. 07-57 (July 9, 2007) at 2, Ex. ES-1 (listing sound quality as a distinguishing characteristic of satellite radio).

[redacted]]].[139] It is also noteworthy that these Comments overstate the sound quality advantage of satellite radio. Sound quality can vary depending on radio and installation. About half of the current base of satellite radio subscribers use radios purchased on the aftermarket and sound quality over aftermarket installations may be inferior to factory installations. Moreover, the sound quality advantage of satellite radio over terrestrial radio is not necessarily permanent. Terrestrial radio companies are not standing still. They are innovating in response to satellite radio by offering HD radio, which provides higher quality sound.[140]

66. Gregory Sidak claims that iPods belong in a separate market for the same reason, arguing that the iPod gives relatively poor sound quality when attached through the FM transmitter or cassette attachment.[141] Sidak ignores the fact that many satellite radios also are attached with FM transmitters. As a result, satellite radio lacks a distinct advantage in this regard for many subscribers. In any event, the sound quality of installations is improving for both iPods and satellite radio. While the fraction of satellite radios factory-installed in vehicles is rising substantially over time, high quality connections are increasingly available for iPod/MP3 players and other devices. Many new vehicles are equipped with auxiliary inputs (and often a nearby power outlet) that provide high quality connections to the sound system for iPods and other MP3 players with a simple interconnect cable that costs perhaps $2-3. About 70% of 2007 car models offer an option to integrate operation of an iPod through the vehicle audio system and integration continues to improve through products like the Ford Sync system. Indeed, a recent survey by J.D. Power and Associates reported that 60% of iPod owners are willing to pay $150 to connect their iPod to their cars' audio system.[142] Thus, this sound quality issue is not a convincing rationale for separate markets.

67. Some Comments argue that satellite radio is a separate market because it has the advantage of a large number of channels, relative to terrestrial radio.[143] A large number of channels provide some advantages, at least for some consumers.[144] However, there are many

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[139] **[[REDACTED** [redacted]]].

[140] The Comments that focus on the sound quality advantage of satellite radio also ignore the internal inconsistency in their position. On the one hand, right now satellite radio has a very small penetration rate despite these advantages. On the other hand, in the future, satellite radio faces growing competition from the improved sound quality of HD Radio.

[141] Sidak-II at ¶14.

[142] Joseph D. Younger, *Car Tunes*, CAR & TRAVEL MAGAZINE (November 2006).

[143] *For example, see* AAI Comments at 22; NAB Petition at 12; Balto at 3.

[144] The Wilson survey finds that 77% of subscribers said that the number of channels was an important factor in the decision to subscribe. Sidak-II at ¶26. But an XM survey found that **[[REDACTED** [redacted]

consumers for whom far fewer channels would be adequate. **[[REDACTED** [redacted]]].[145] **[[REDACTED** [redacted]]].[146] **[[REDACTED** [redacted]]].[147] **[[REDACTED** [redacted]]]. Sprint offers 10 music channels with its basic Power Vision Package and 135 additional channels with a package that costs $5 more; AT&T offers 50 commercial-free channels of music, news, and sports for $8.99 to subscribers with data packages; and Alltel offers a music streaming service that includes 40 channels at a price of $6.99.[148]

68. There are other ways to obtain a wide variety of audio entertainment. For example, by taking a subscription service like Rhapsody or Napster, owners can achieve as much variety as offered on XM and Sirius; for example, Rhapsody has a library of over

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[redacted]].

145 **[[REDACTED** [redacted]]].

146 **[[REDACTED** [redacted]]].

147 **[[REDACTED** [redacted]]].

148 See the discussion above, which describes other offerings of the wireless carriers, including Sprint offering 20 Sirius channels for $6.95, AT&T offering 25 XM channels for $8.99, and Alltel offering 20 XM channels for $7.99.

3,000,000 songs.[149] Listeners also can obtain iPods and other MP3 players with very large hard drives to store music and other content. An iPod with 80 gigabytes of disk space can hold over 1,000 hours of audio. If the listener wants new and different music every day, the subscription services can provide it. These subscription services are priced comparably to Sirius and XM.[150] In addition, the number of terrestrial radio stations is increasing as HD radio is being rolled out with new HD2 side channels.

69. Some Comments argue that satellite radio is a separate market because, unlike iPods and other MP3 players, satellite radio does not require listeners to program their music themselves and potentially has a wider-range of audio channels available.[151] While these characteristics likely are an advantage for some listeners, they are not for others who do not care about variety or who prefer their own mix of songs and can obtain a "surprise" element by using the "shuffle" feature. In addition, consumers who value music programmed by others have many options besides satellite radio, including terrestrial radio, HD radio and Internet radio. Music subscription services like Rhapsody, Yahoo and Napster offer a huge variety of musical choices, including playlists formulated by others and Internet radio stations, that allow listeners to enjoy new and unfamiliar music. Podcasts allow listeners to enjoy music and talk on their MP3 players. A variety of talk programming is available, including news and personalities like Rush Limbaugh and Sean Hannity.[152] Moreover, listeners may have the ability to load their MP3 players with content from Internet radio stations.[153] Obviously, when vehicles gain access to Internet radio in the coming years, Internet radio will have an even more direct path to in-car audio systems.

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[149] *See* http://www.real.com/rhapsody/unlimited?pageid=broadBandHomePage&pageregion=bottom_region&src=rhapsody%2Crealhome_bb_0_3_1_0_0_1_0&pcode=rn&opage=realhome_bb (last visited July 5, 2007).

[150] Rhapsody Unlimited, which allows the subscriber to listen to unlimited music on the PC, is available for $12.99/month. Rhapsody to Go, which allows the subscriber to download unlimited music on an MP3 player, is available for $14.99/month. *See* Rhapsody Offer Terms, *available at* http://shop.rhapsody.com/plans?pageid=unagi.11939110.wrapper&pageregion=A1&src=rotw.shop_overview&pcode=rn&opage=rotw.shop_overview (last visited July 21, 2007). The basic subscription tier of Napster offers unlimited listening and PC downloading on up to three computers for $9.95 per month. For $14.95, music fans can subscribe to Napster To Go, the company's portable subscription tier, and enjoy unlimited transfer of music to their choice of compatible MP3 players, cell phones and PDAs in addition to unlimited streaming and PC downloading. *See* Napster, *available at* http://free.napster.com/subscribe/ (last visited July 17, 2007). *See also* Troy Dreier, *Napster 3,* PC MAG.COM, *available at* http://www.pcmag.com/article2/0,1895,1765320,00.asp (last visited July 17, 2007).

[151] *For example, see* Balto at 6.

[152] *For example, see,* ABC News Website, *available at* http://abcnews.go.com/Technology/Podcasting/ (last visited July 13, 2007); *see also* http://www.rushlimbaugh.com/home/Rush247.guest.html (last visited July 13, 2007); *see also* http://podcasts.yahoo.com/series?s=fcda1cab83fa57f24c12c5ac7f680f76 (last visited July 13, 2007).

[153] One product that facilitates this is the iFill. *See* http://www.griffintechnology.com/products/ifill/ (last visited July 5, 2007).

70. The Comments that discuss the advantages of satellite radio also tend to ignore its offsetting competitive disadvantages. Most notably, satellite radio subscribers face a monthly subscription price of $12.95 and must purchase a specialized receiver, whereas terrestrial radio is free and virtually every automobile comes equipped with an AM/FM radio. Aside from weather and traffic, satellite radio also does not have the local news and other local content that terrestrial radio stations offer. These offsets represent significant disadvantages for Sirius and XM. Satellite radio has only about 14 million subscribers, whereas over 230 million consumers listen to terrestrial radio each week.[154]

71. Finally, as previously discussed, feature convergence is reducing product differentiation among these competing devices. Satellite radios and wireless phones are adding more storage capability, wireless phones are adding audio streaming services, and iPods and other MP3 players are gaining the capability to acquire additional content and to do so away from home. Internet radio is becoming available away from home. This feature convergence is intensifying over time, and will further increase the scope for demand substitution.

72. Some Comments have suggested that listening on iPod/MP3 players is a "complement" for listening on satellite radio, not a "substitute" that would constrain the pricing of satellite radio.[155] This is not correct as a matter of economic logic. Economic complementarity occurs if the cross-price elasticity of demand is negative, that is, if an *increase* in the subscription price of satellite radio would lead to a *decrease* in the demand to listen on the other products (*e.g.*, terrestrial radio or MP3 players); thus, listening on the other products would not constrain the pricing of satellite radio).[156] In contrast, products are economic substitutes if the cross-price elasticity of demand is positive, that is, if an increase in the subscription price of satellite radio would lead to an *increase* in the demand for listening on other products; thus, listening on the other products would constrain the pricing of satellite radio. The latter substitute product relationship is more plausible than the former and is supported by the evidence. **[[REDACTED** [redacted]]].

73. Some Comments claim that satellite radio and terrestrial radio are complements because certain data has suggested that satellite radio subscribers listen to more terrestrial radio than do non-subscribers.[157] Such results are not evidence on how individuals would respond to a

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[154] Arbitron, *Radio Today, How America Listens to Radio: 2007 Edition* at 90. For the estimate of U.S. population aged 12+ as of January 1, 2007, *see* Arbitron, *Radio Nationwide Reference Guide* (Fall 2006) at 4.

[155] Sidak-I at 30; Sidak II at ¶20; *see also* Napoli at 6.

[156] *For example, see* Jeffrey M. Perloff, MICROECONOMICS 53-54 (2007).

[157] Sidak-II at ¶19-20; *see also* AAI Comments at n.51. The New York Times article cited as evidence by Sidak at ¶20 does not in fact contain information on how much time satellite radio subscribers spend listening to terrestrial

price change. Instead, they compare the listening to terrestrial radio by different groups of individuals who likely differ in their overall interest in audio entertainment, with the high-interest people listening to more of everything. The high-interest people, who listen the most, also tend to subscribe to satellite radio. When they subscribe, they cut back on their AM/FM listening, as suggested by the survey results of listening patterns already discussed, but they may not cut back AM/FM listening on a one-to-one basis. Thus, their total listening may be higher. This fact pattern would not make listening on satellite radio and terrestrial radio or MP3 players into economic complements.[158]

74. Some Comments have suggested that satellite radio is a separate market because subscribers are "locked-in" as a result of equipment purchases or by the fact that their automobiles come equipped with satellite radio already installed.[159] The implication drawn for market definition is erroneous. If subscriber lock-in is a result of past equipment purchases, that lock-in would apply to either XM or Sirius individually, and not to satellite radio generally. Thus, this type of lock-in to an *individual firm* would not provide any incremental pricing power to the *merged firm*. The lock-in is not merger-specific.[160] In fact, this type of lock-in reduces the potential for adverse competitive effects of the merger, not the other way around, because the lock-in reduces substitution between Sirius and XM before the merger.[161] Finally, consumers face no switching cost if they decide to move to terrestrial radio, as terrestrial radio receivers are freely available in the car and elsewhere.

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radio. The article only includes survey information that compares the listening behavior of the average consumer with what it somewhat misleadingly labels as "digital radio subscribers" – survey respondents who listened to online radio in the past *or* who had ever listened to an audio podcast *or* who subscribed to satellite radio. No information was provided on the listening behavior of those respondents who *only* subscribed to satellite radio. Nor is such information available in the underlying study on which the New York Times article apparently relies, Arbitron/Edison Media Research, *The Infinite Dial 2006: Radio's Digital Platforms* (2006).

[158] For example, consider the example of "hard rock" CDs, "soft rock" CDs and CD players. CD players are an economic complement for the CDs themselves. Both are needed to listen to a CD. If the price of CDs were to rise substantially, that would reduce the demand for CD players. However, hard rock and soft rock CDs likely are substitutes. If the price of hard rock CDs were to rise, that likely would increase the total demand for soft rock CDs, not reduce it. At the same time, a person with a high income and a love of rock-and-roll may have many hard rock and soft rock CDs, even though they are substitutes. That person might like to listen to relatively more soft rock in the morning and relatively more hard rock at night. The two types of CDs might be viewed as complements in a layman's use of the term, but the two products are not likely to be economic complements that belong in separate markets. Instead of being economic complements, hard rock and soft rock CDs more likely are economic substitutes with positive cross-price elasticity of demand. As a result, the two types of CDs would belong in the same relevant market.

[159] *See* Sidak-I at 12.

[160] A similar analysis would apply to any lock-in to a particular service caused by long term contracts or cancellation fees.

[161] Note also that XM and Sirius both offer substantially lower subscriptions price to people who are buying a second radio subscription, rather than giving a lower price to people who are initially choosing between XM and Sirius to be their service provider, and, thus, have not yet become "locked-in." The rates for additional subscriptions are $6.99 versus $12.95 for the first subscription.

[[REDACTED [redacted]]].[162] There also are no switching costs for those consumers of moving from a satellite radio service to these alternatives.

C. Penetration Pricing, Market Growth and the *SSNIP* Test for Market Definition

75. The relevant market should include all the products that are "reasonably interchangeable" with the products sold by the merging firms.[163] The Merger Guidelines suggest the use of the *ssnip* test for market definition to implement this standard.[164] The *ssnip* test evaluates whether a hypothetical "'small but significant and non-transitory' increase in price" (*ssnip*) for a group of products by a hypothetical monopolist would cause so many customers to substitute away from the products to make the hypothetical price increase unprofitable.[165] If the price increase would be profitable, then the group of products is said to comprise a relevant market.[166]

76. In mature industries, it might be reasonable to implement the *ssnip* test by focusing on short-run profitability.[167] But this approach does not accurately capture the significance of

[162] [[REDACTED [redacted]]].

[163] Eastman Kodak Co. v. Image Tech. Servs., Inc., 504 U.S. 451, 482 (1992) (citing du Pont); United States v. E.I. Du Pont de Nemours & Co., 351 U.S. 377, 395 (1956) ("reasonably interchangeable by consumers"). The product offered by Sirius (and XM) includes several components – the device itself and the monthly content service (which in turn includes the audio content). For certain other products, the components are sold by different firms. For example, Pioneer may sell a terrestrial radio, while Clear Channel and other broadcasters provide the content service; or, Sansa sells an MP3 player, while Rhapsody sells a monthly content subscription service and EMI sells a CD that can be burned to a computer and transferred to the Sansa device for listening. The terrestrial radio plus the broadcasted content (and the Sansa plus the content service and content) are substitutes for the packages provided by Sirius and XM. Thus, it does not make sense for this merger analysis to define separate markets for each separate component but rather focus on substitution among the packages.

[164] *See* Merger Guidelines at § 1.11.

[165] The non-transitory price increase typically is considered to last for a long period of time. As stated in the Guidelines, "In attempting to determine objectively the effect of a 'small but significant and nontransitory' increase in price, the Agency, in most contexts, will use a price increase of five percent *lasting for the foreseeable future*." Merger Guidelines at § 1.11 (italics added). In a recent article, Dennis Carlton suggests that the *ssnip* might last for two years. *See* Dennis W. Carlton, *Market Definition: Use and Abuse*, 3 COMPETITION POLICY INTERNATIONAL, 15 (2007) (hereinafter "Carlton (2007)").

[166] *See* Merger Guidelines at §§ 1.0, 1.32.

[167] Several recent articles have raised questions about the usefulness of the *ssnip* test (or *critical loss* analysis) when it is not applied within a consistent economic framework. *See, for example,* Carlton (2007); Michael L. Katz & Carl Shapiro, *Critical Loss: Let's Tell the Whole Story*, 17 ANTITRUST 49 (2003); Daniel P. O'Brien & Abraham L. Wickelgren, *A Critical Analysis of Critical Loss Analysis*, 71 ANTITRUST L.J. 161 (2003); Kenneth L. Danger & H.E. Frech III, *Critical Thinking about "Critical Loss" in Antitrust*, 46 ANTITRUST BULLETIN 339 (2001); and James Langenfeld & Wenqing Li, *Critical Loss Analysis in Evaluating Mergers*, 46 ANTITRUST BULLETIN 299

demand substitution for the profitability of a price increase by the merged firm in this case because it ignores longer-run considerations, which dominate for XM and Sirius in their young and growing businesses. This merger involves two firms that have been in business less than 6 years and whose sales are projected to nearly double over the next 4 years.

77. In evaluating the profitability of a price increase, growing firms like XM and Sirius undoubtedly focus more on the impact of price changes on prospective new subscribers than simply on the impact of the price change on current subscribers.[168] These firms recognize that losing a customer (or slowing down growth) costs much more than any foregone short-run price-cost margin, the usual consideration in mature markets. The cost is much greater because every lost current customer means a loss of future margins, both for that customer (until the customer churns) and for other customers that would have been attracted to satellite radio by virtue of the "dynamic demand spillovers" discussed in more detail below.

78. In these circumstances, the *ssnip* test must focus on the longer-term effects of a higher price on buyer behavior and seller profitability. A short-run profitability test would not adequately capture the impact of longer term (*i.e.*, non-transitory) price increases in a growing market with dynamic demand, as explained more technically in Appendix A. In such a market, a price increase may appear profitable if only the near term impact is considered, but may fail to raise longer-run profitability or serve the longer-run interests of the firm in the pre-merger world.[169] Such price increases would likely not be attempted after a merger by a non-myopic firm, just as they have not been attempted in the pre-merger world. Thus, a finding that demand is inelastic in the short-run would not imply that a merged firm would have the incentive to raise prices.[170]

(2001). The issues raised in these articles are important in the present matter as well. These issues are in addition to the potential pitfalls that arise if the *ssnip* test is not implemented very carefully when there are dynamic demand spillovers.

[168] *See, for example,* the statements of Mel Karmazin. Thomson StreetEvent, *Sirius Satellite Radio Final Transcript, SIRI – Q1 2005 Sirius Satellite Radio Earnings Conference Call* (April 28, 2005) at 11 ("we know that there is price elasticity. What our focus today is on growing the category. It is a relatively small number of people that are currently subscribing to satellite radio. We want that number to grow huge, and we think that being attractively priced at retail, providing great content at good value is the way we grow the market.") *See also Id.* at 12-13 ("our general sense is we know that we have the ability to increase our price…Having said that, our interest as a Company is in growing subscribers.") Note that Mr. Karmazin was referring to Sirius' ability in the pre-merger world.

[169] In fact, this economic analysis suggests that in these circumstances, the subscription price set by a satellite radio provider does not satisfy the standard conditions for short-run profit-maximization and the static Lerner condition would misleadingly imply that a price increase would be profitable. Moreover, even a temporary price increase has longer-term effects when demand is dynamic and thus may fail to maximize longer-run profits even if it is profitable in the short-run. *See* Appendix A.

[170] For example, Sidak claims that the fact that XM "subscriber growth continued at such a rapid pace in the presence of 30 percent price increase [*sic*] underscores the low elasticity of demand faced by SDARS providers."

79. In a growth context like this one, the standard *ssnip* test used for market definition – and the associated *critical loss* analysis – cannot be implemented the same way they might be implemented in mature industries. The *critical loss* analysis must take into account the relevant characteristics of the industry under consideration. In particular, a static analysis that works well for mature industries will be misleading here by overstating the longer-term profitability of a price increase. Instead, it is necessary to perform a dynamic analysis and evaluate the effect of the *ssnip* on the growth rate of the hypothetical monopolist's sales, as well as the impact on the customer base at the time of the price increase. A dynamic critical loss analysis would take the firm's growth rate into account and would evaluate how the *ssnip* would reduce current and future sales, both through direct price effects and also because of dynamic demand spillovers.

80. This longer-run perspective is particularly relevant for XM and Sirius. As discussed, they still are relatively new products attempting to penetrate the audio entertainment market and establish a customer base for future growth. Their penetration rates are still low. As of the end of 2006, their combined penetration rate was less than 5% of U.S. population.[171] The number of satellite radio subscriptions currently is expected to nearly double over the next four years.

Sidak claims that this constitutes "direct evidence on the own-price industry elasticity of demand for SDARS" that implies that satellite radio is a separate market. Sidak-I at 11-12. Sidak's analysis is defective for several reasons. First, he does not employ an objective and appropriate benchmark for growth in the absence of the price increase. The proper benchmark for evaluating the response to the price increase would be the growth path absent the price increase. Saying that the growth "continued at a rapid pace" or even comparing the growth rate from the previous year as a benchmark could be misleading because growth rates change naturally over time. Second, there were numerous other changes affecting demand that occurred around the same time as the price increase. For example, XM introduced Major League Baseball. XM also included XM Online, and High Voltage channel (featuring Opie & Anthony) in the regular subscription when it raised price, all of which previously had involved extra charges. XM also permitted subscribers to lock-in the lower rate by prepaying for the lock-in period and many subscribers took that option. Thus, it is vastly oversimplified to simply say that XM increased price by $3 per month. Third, as discussed in the text, a finding that XM's demand is inelastic would not imply that the relevant market is satellite radio. A finding that XM's demand is inelastic is inconsistent with standard profit-maximization conditions. In fact, if one were to ignore that inconsistency and simply conclude that the market is defined by the results of the *ssnip* test implemented in this way, then the conclusion would be that the market would be comprised solely of XM, not satellite radio. *See also* Thomas W. Hazlett, *The Economics of the Satellite Merger* (June 14, 2007) (hereinafter "Hazlett") at 30. Fourth, Sidak's profitability analysis was based only on the near term impact on subscribers and profitability, not on the longer-term impact that is more relevant in growing market like this one. Even if a rigorous study were to find that the demand for satellite radio is inelastic in the short-run, that fact would not imply that satellite radio is a relevant market. This is because the longer term effects of a price change by the merged firm on profits might eliminate any economic incentive to raise price, even if the effect of the price change were to increase profits in the near term.

[171] XM and Sirius together had 13.7 million subscriptions as of the end of 2006 (from XM and Sirius Form 10-K data), compared to the U.S. population of 300 million. U.S. Census Bureau News, *Census Bureau Projects Population of 300.9 Million on New Year's Day, available at* http://www.census.gov/Press-Release/www/releases/archives/population/007996.html (last visited July 12, 2007).

81. This is also a market with dynamic demand and that fact makes the longer-run focus essential. It also makes the *ssnip* test and the evaluation of the likely demand substitution from a price increase more complicated still. Increased sales in the present lead to higher sales in the future. We refer to this as a "dynamic demand spillover effect."[172] This dynamic demand spillover effect occurs for several reasons. First, the stock of current subscribers will spread the word about the product to other potential subscribers, as in "viral marketing." These subscribers explain and demonstrate the product to their friends, which allows the friends to experience the product without buying it. Current subscribers also can recommend satellite radio to their friends. This type of information diffusion reduces uncertainty for potential customers and so induces incremental purchases by some of them. In this regard, **[[REDACTED** [redacted]]].[173] In addition to this type of information diffusion, an increased consumer base enhances the likelihood that the customer base will be sufficient to prove the viability of the product in the market to other consumers or set off a "bandwagon effect" by generating a "market buzz" that can spur further growth by creating a momentum for the product.[174] Third, faster sales growth also encourages retail outlets to devote more space and marketing effort to the product, which helps to maintain the pace of sales.[175] Similarly, it helps to maintain auto manufacturer interest in promoting the product.

82. In this type of dynamic demand market situation, firms have the incentive to maximize longer-run profits, rather than simply trying to maximize short-run profits. This gives them an increased incentive to engage in low "penetration pricing" to take into account the benefits of the dynamic spillover effect.[176] Because of these longer-term benefits of increasing the number of subscribers and subscriber growth, the merged firm (and XM and Sirius individually before the merger) would have a reduced incentive to raise prices, even if short-run profits were to increase from a price rise. A higher current price would lead to fewer current subscribers, which in turn would lead to lower growth and fewer future subscribers, as the magnitude of the dynamic spillover effect is reduced. It is important to

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[172] We sometimes use the term "dynamic demand" for short.

[173] **[[REDACTED** [redacted]]].

[174] For example, as stated by Accenture: "Raising prices will slow growth. Slowed growth may "kill the buzz" and increase churn, especially if combined with rumors of slowed penetration and lack of timely profit which may shake market confidence." Accenture, *Satellite Radio Strategic Overview* (February 2007) at 6.

[175] During this penetration phase, the firm similarly has the incentive to offer large incentives to retailers to stock the product and demonstrate it to consumers who come into the store. The retailers serve the same role as early adopters – spreading the word about the product, demonstrating it and recommending it.

[176] *See* Appendix A for a technical analysis of the impact of dynamic demand on pricing and investment incentives. *See also* Jean Tirole, THE THEORY OF INDUSTRIAL ORGANIZATION (MIT Press 1990) at 71.

emphasize that these incentives exist both before and after the merger, and lead to lower prices than would otherwise occur.

83. Pricing and other marketing strategies of XM and Sirius are consistent with this longer-run focus and the penetration pricing strategy. Sirius and XM have not yet turned a profit. **[[REDACTED** [redacted]]]. Setting prices that yield low margins is consistent with penetration pricing. This strategy makes sense for a firm that wants to form a larger customer base to popularize its product to others.

84. Thus, this analysis explains why firms like XM and Sirius in such growth markets would price below the short-term profit maximizing level. This pricing incentive must be taken into account when applying the *ssnip* test to define markets by focusing on longer-term demand substitution and longer-term profitability. The application of the *ssnip* test in such settings must account for growth. It also must account for the dynamic demand spillovers that characterize satellite radio.[177] The evaluation of the profitability of a *snnip* thus also must take into account demand substitution in the future as well as the present. This factor makes the *ssnip* test more difficult to implement than it is in a mature market without dynamic demand spillovers.[178]

85. As discussed in more detail in the discussion of competitive effects below, this dynamic spillover effect also helps to explain why the merger likely will not lead to consumer harm.[179] In the pre-merger world, the dynamic spillover effect generates a free-rider problem between Sirius and XM. Lower prices charged by XM also would increase the number of Sirius subscribers, and vice versa. In other words, a price reduction by XM also has a dynamic spillover effect on the sales of Sirius (not just on the sales of XM) and thus produces a positive externality on the long-term profits of Sirius. This raises a free-rider problem in the pre-merger world. The merged entity will resolve this free-rider problem by internalizing the positive demand externality, thereby reducing any post-merger incentive

[177] When such dynamic spillovers are present, firms focus on longer-term profits and engage in penetration pricing, rather than simply attempting to maximize short-term profits. Thus, the short-term or static Lerner condition does not hold. This implies that if the short-term *ssnip* test (as is often used in mature industries) were to be applied mechanically to this type of growing industry with demand spillovers, it would not yield a reliable result. It would likely predict a market that is overly narrow. Similarly, in dynamic markets, the static Lerner condition is unlikely to provide a meaningful measure of market power. *See* Robert S. Pindyck, *The Measurement of Monopoly Power in Dynamic Markets*, 28 JOURNAL OF LAW & ECONOMICS 193 (1985).

[178] This also means that it is not possible to infer the short-term price-elasticity of demand from the observed short-term profit margin. The relationship between the margin and the elasticity of demand is more complicated, as discussed in Appendix A. *Cf.* Sidak-II at ¶41.

[179] *See* Section IV.

to raise prices. Thus, this change in incentives is a synergy that will reduce post-merger prices, *ceteris paribus*.

86. Eventually, the market will mature, net growth will stop, and these penetration pricing incentives may no longer be significant. But, by that time, the market will be subject to even more significant competition from wide availability of Internet radio in vehicles, mobile WiMAX, more robust and widespread cellular networks and audio content offerings, and other technological advances that will constrain prices.

D. Conclusion on Market Definition

87. The proper relevant product market is audio entertainment products, not satellite radio alone.[180] The evidence suggests that other audio entertainment products are reasonable substitutes for Sirius and XM.

88. The fact that these products are differentiated does not change this conclusion. The exclusive content of XM and Sirius, their *de facto* exclusive installation relationships with automobile manufacturers and the switching costs arising from the need to replace equipment all serve to differentiate the two satellite services from each. They reduce the cross-elasticity of demand and likely degree of demand substitution between the two satellite radio services. At the same time, listening to competing audio entertainment products such as AM/FM radio, HD radio, wireless phones, iPod/MP3 players, and others are substitutes for the two satellite radio services, despite the product differentiation among them and the two satellite radio services and even though listening to satellite radio may lead to subscribers purchasing more CDs. Audio entertainment products also are becoming closer listening substitutes over time as technology advances and the products converge and blend. These facts suggest that that the relevant market is audio entertainment products, not satellite radio-only.[181]

III. MARKET SHARES AND CONCENTRATION IN THE MARKET FOR AUDIO ENTERTAINMENT DEVICES

89. Market definition is useful for calculating market shares and market concentration. If the merging firms have a low combined market share in a relevant market that is relatively unconcentrated, those facts are circumstantial evidence that the merger is unlikely to lead to reduced competition. For this reason, the Merger Guidelines contain "safe harbors"

[180] Even if the market were erroneously defined as satellite radio-only, the sellers of other audio entertainment products would be included as "market participants" in this market. They would be assigned market shares because of their ability to engage in production substitution (i.e., product extensions and repositioning).

[181] Analysis of likely substitution also is relevant for competitive effects analysis. The fact that XM and Sirius are differentiated products reduces the likelihood of adverse effects on post-merger price competition, even if the Commission erroneously decided to define the relevant market as satellite radio.

when the post-merger HHI is less than 1000; when the post-merger HHI is less than 1800 but the increase in the HHI is less than 100 points; and when the post-merger HHI is above 1800 but the increase in the HHI is less than 50 points.[182] Enforcement involving unilateral effects generally involves mergers where the combined market share of the merging firms exceeds 35%.[183]

90. Where merging firms have a high combined market share and market concentration is high, those facts represent circumstantial evidence that a merger is more likely to lead to reduced competition. However, the general association of reduced competition with high concentration does not mean that market definition is the endpoint of merger analysis. The association of high market shares and market concentration with reduced competition is a rebuttable presumption in antitrust law. The importance of market shares and concentration has declined over time in merger analysis. Indeed in the Baker-Hughes case decided by the DC Circuit in 1990, Justice (then Judge) Clarence Thomas opined (in an opinion joined by Justice (then Judge) Ruth Bader Ginsburg) that the Supreme Court "has adopted a totality-of-the-circumstances approach" to the Clayton Act, in which "Evidence of market concentration simply provides a convenient starting point for a broader inquiry into future competitiveness."[184]

91. When the relevant product market is defined properly as audio entertainment products, the combined market share of XM and Sirius and post-merger market concentration are very low and place the merger into the safe harbor contained in the Merger Guidelines.[185] There are a number of reasonable ways to measures the shares of satellite radio and other services in the market for audio entertainment devices, each of which has strengths and weakness as a measure of competitive significance.[186] We present estimates of shares using four

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[182] *See* Merger Guidelines at § 1.51; *see also* Federal Trade Commission & U.S. Department of Justice, *Commentary on the Horizontal Merger Guidelines* (2006) (hereinafter "Merger Commentary") at 15.

[183] *See* Merger Commentary at 26 ("As an empirical matter, the unilateral effects challenges made by the Agencies nearly always have involved combined shares greater than 35%.")

[184] United States v. Baker Hughes, Inc., 908 F.2d 981, 984 (D.C. Cir., 1990). *See also* Carlton (2007) at 18-19.

[185] Even if the market were erroneously defined as satellite radio-only, the sellers of other audio entertainment products would be included as "market participants" and assigned market shares because of their ability to engage in production substitution, in the sense of rapid product extensions and repositioning. In the language of the Merger Guidelines, these producers are uncommitted entrants who are defined as "market participants" and assigned market shares in the evaluation of post-merger concentration, even if the market is described narrowly. Merger Guidelines at § 1.32. The Guidelines go on to explain why the market could be defined broadly in these circumstances, stating that, "[i]f production substitution among a group of products is nearly universal among firms selling one or more of those products, however, the Agency may use an aggregate description of those markets as a matter of convenience." *Id.* at n.14.

[186] As discussed below, some Comments have argued that market shares should be measured using a measure of capacity, the number of channels, but this is not a reasonable measure of the competitive significance of participants in the relevant market.

different measures of the shares of various audio entertainment products or devices: (1) total time spent listening by consumers; (2) revenue earned; (3) the number of owners or subscribers; and (4) the number of listeners or users. Precise values for many of these measures are not available, so market shares must be based on estimates.[187] As a result, we present multiple estimates of market shares in the audio entertainment market, using the four different share measures, based on multiple data sources. These market share estimates are presented in the tables in Exhibit C. Table C1 summarizes these market shares, while Tables C3-C6 provide more detail on these estimates and their derivation.[188]

92. The pattern is strikingly consistent: satellite radio's share of the market for audio entertainment is very small across all the measures and estimates. The estimated combined market share of Sirius plus XM ranges from **[[REDACTED** [redacted] **]]**.[189] Furthermore, all estimates show that the merger will result in a negligible change in market concentration; the merger results in a change in the HHI ranging from **[[REDACTED]]** points.[190] The consistency of the pattern reinforces the conclusions that satellite radio commands only a small share of the audio entertainment market and that the merger will have only a negligible effect on market concentration.

93. Some Comments suggest that the market should be no broader than satellite plus AM/FM radio.[191] As previously discussed, this market definition would be inappropriately narrow. However, even if the market were improperly defined this narrowly, the merger would not raise competitive concerns. Table C2 in Exhibit C summarizes multiple estimates of shares in this narrower, purported market.[192] The combined market shares of Sirius and XM remain small, ranging from **[[REDACTED]]**, depending on the measure and estimate of

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[187] Alternative estimates of shares for some of these measures are available from different data sources. Some data sources fail to provide share estimates for one or another type of audio entertainment, and consequently the market shares are overstated for those products that are included.

[188] Generally the individual estimates that constitute a set of share estimates are drawn primarily from a single data source in order to maintain consistency. For most measures, share estimates for XM and Sirius from third parties have been replaced with estimates based on data from the companies.

[189] Again, it should be pointed out that in most data sources, shares for some audio entertainment products are missing. For example, the set of estimates that yield the highest share for satellite radio includes no estimate of the number of people who listen to CD players.

[190] HHI levels cannot be calculated from these estimates. With the exception of XM and Sirius, these are estimates of the shares of sources of audio entertainment, not of the shares controlled by individual suppliers of audio entertainment. Since there are multiple suppliers of each type of audio entertainment, mechanically summing the squared shares estimated in the tables in Exhibit C would result in a very large overestimate of the HHI.

[191] Sidak, for example, considers concentration in a market that includes satellite radio and analog and HD terrestrial radio, but not any broader market. Sidak-I at 36-41; *see also* Sidak-II at 3 and NAB Petition at 24, n.81.

[192] These estimates are based both on the same sources used for the estimates of shares of the market for audio entertainment and on additional sources that can be used only to estimate shares in the narrower, purported market of satellite and AM/FM radio. *See* Exhibit C for details on these shares and their derivation.

shares.[193] The merger has a small effect on market concentration even in this narrower purported market. All of these shares lead to an estimated change in HHI of less than 50 points.

94. By all of these share estimates – for either the market for audio entertainment or an assumed narrow market limited to satellite and AM/FM radio – the combined market shares of Sirius and XM are low enough that the post-merger increase in the HHI would be less than 50 points. This would place the merger in the safe harbor range of the Merger Guidelines. Thus, according to the methodology in the Merger Guidelines, the analysis of competitive effects could be stopped at this point, with the conclusion that the merger is unlikely to harm competition.

95. Some Comments have suggested that market shares in a radio market should be measured on the basis of the number of channels controlled by each provider, as a measure of capacity.[194] As discussed in the Merger Guidelines, a market share measure based on capacity is mainly used for homogeneous products, like steel, in which price is the main focus of competition. It is not appropriate for differentiated products like audio entertainment. When products are differentiated, market shares based on revenues or other measures of output are more appropriate than capacity measures.[195] Measuring market shares by capacity in this case also makes no economic sense because substitution to satellite radio from terrestrial radio requires large switching costs by subscribers. Moreover, if capacity were used, then the capacity share of satellite radio likely would not be large. Wireless phones can provide a large number of alternative streaming services to subscribers. iPods and MP3 players can access huge music repertoires, including all the songs and playlists provided by the subscription services. There are thousands of Internet radio channels available to people with broadband connections at home or on wireless phones.[196]

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[193] The estimate that satellite radio has a 3.4% share of a satellite radio plus terrestrial radio market [[**REDACTED** [redacted]]]. The 3.4% figure is drawn from a source that does not provide the information necessary to calculate satellite radio's share in the broader audio entertainment market.

[194] Sidak-I at 37.

[195] As stated in the Merger Guidelines: "Market shares will be calculated using the best indicator of firms' future competitive significance. Dollar sales or shipments generally will be used if firms are distinguished primarily by differentiation of their products. Unit sales generally will be used if firms are distinguished primarily on the basis of their relative advantages in serving different buyers or groups of buyers. Physical capacity or reserves generally will be used if it is these measures that most effectively distinguish firms." Merger Guidelines at § 1.41. *See also* Gregory J. Werden, *Assigning Market Shares,* 70 ANTITRUST L.J. 67, 83 (2002) ("Capacity-based market shares are commonly used in process industries that produce homogeneous products using equipment for which there is a rated capacity.")

[196] *See, for instance,* http://radio-locator.com (last visited July 17, 2007) for a list of over 2,500 Internet radio stations.

96. If the relevant market were erroneously restricted solely to satellite radio service, the post-merger market share of the combined firm would be 100%. However, even if this market definition were assumed, the resulting market shares and concentration levels would not mark the end of a rigorous merger analysis. High concentration creates only a rebuttable presumption. There are several important reasons why a presumption of competitive harm would be rebutted in this matter, as discussed in the analysis of competitive effects.

IV. COMPETITIVE EFFECTS ANALYSIS

97. The ultimate goal of merger analysis is to determine the likely impact of a merger on market output, prices and other competitive instruments such as product quality and innovation. Market definition is a tool used to help make this determination, rather than being an end in itself. Thus, while it seems clear that the relevant market is much broader than satellite radio-only, for all the reasons discussed above, our economic analysis indicates that the merger is unlikely to lead to a reduction in competition or consumer harm, even if the market is erroneously defined narrowly. Instead, the merger is likely to generate consumer benefits through increased competition, lower prices and increased quality. As a result, the output of the combined firm is likely to increase from the merger.

98. Economists have distinguished between two main competitive concerns arising from mergers: coordinated effects and unilateral effects. Coordinated effects involve the potential for post-merger tacit or explicit coordination of price or some other significant competitive instrument among the merged firm and other competitors. Unilateral effects involve the potential that the merged firm may raise prices, even if other competitors hold their prices constant at pre-merger levels. The purported concern over the proposed merger of XM and Sirius involves unilateral effects, not coordinated effects. There apparently have been no claims in any of the Comments that the merged firm would engage in coordinated conduct with the providers of other types of audio entertainment products, nor is it plausible that it could or would do so. The audio entertainment market is too unconcentrated and complex to support a coordinated effects theory.

99. Adverse unilateral effects are highly unlikely from this merger for a number of reasons: the product market is broad; the merged firm has a very low market share; there are ample opportunities for rival repositioning; inter-modal competition is increasing; and the merger will involve cognizable merger-specific efficiencies, including incentives to reduce prices, improve quality and expand demand-enhancing and cost-reducing investments.

100. As a general matter, unilateral effects analysis based on the Merger Guidelines would focus first on whether the products of the merging firms are especially close substitutes, relative to the products sold by other competitors. Stated in its simplest form, the unilateral effects concern is that the merged firms would have an incentive to raise prices above the levels that the individual firms would have chosen absent the merger. The concern is that a

merger allows a firm to "recapture" some of the (actual or potential) customers that it would lose if the firm raised price before the merger, because these customers would switch (or be "diverted") to its merger partner; this diversion would occur for customers who view the product of the merger partner as the next-best substitute.[197] If a large fraction of the customers a firm would lose from a price increase would switch to its merger partner, then there is a greater concern about post-merger unilateral effects, *ceteris paribus*. In contrast, when there are a number of other firms that sell close substitutes, so that a smaller fraction of the lost customers would switch to the merger partner, the unilateral effects concern is lessened.

101. Even in situations where the recapture effect is significant, *ceteris paribus*, there may be other offsetting economic reasons why the merging firms would not have an incentive to raise price and reduce output. As a general matter, these offsetting reasons can involve competition in the present from other products outside the narrow market; increased competition in the longer-run, either from technological advance or in response to the merger (that is, emerging competition, rival repositioning and entry); or procompetitive incentive effects flowing from merger efficiencies and other synergies. There are a number of specific such factors at play here that collectively lead to the conclusion that the merged firm will lack the incentive and ability to exercise market power and harm consumers by raising price or reducing product quality.

- First, as discussed already in the context of market definition, Sirius and XM face extensive competition with a number of other audio entertainment products and associated content services. Sirius and XM would not gain the power and incentive to raise prices after the merger.[198] In fact, there is relatively little diversion between these two firms today.
- Second, as discussed already, inter-modal competition will increase over time. Increased competition will come from growth in HD radio. It also will come from improvements in wireless phones and connected MP3 players that permit listeners to stream audio and acquire content more seamlessly from wireless carriers, subscription services, and Internet radio, including when listeners are away from home or in vehicles.
- Third, the merger will give the merged firm the immediate incentive to maintain or reduce penetration prices by resolving the free-rider problem involved in the dynamic

[197] Absent the merger, that loss in profits from diversion to other firms (including the merger partner) would constrain the incentive of the firm to raise it prices. But, after the merger, the loss in profits from consumers who view the merger partner as the next-best substitute would not be considered a *net* loss.

[198] Some Comments have suggested that even if there is sufficient competition in areas with a large number of AM/FM stations, competition will be reduced in areas where there are only a few AM/FM signals. This issue is discussed in Section V.

demand spillover effects. This same synergy also will result in incentives for greater demand-increasing and cost-reducing investments.

- Fourth, the merger will reduce the costs of the merged firm, which will give the merged firm the incentive to reduce prices and increase quality.
- Fifth, the merger will improve product quality in several ways, including the ability to offer to more subscribers content that is currently exclusive to a single service, an increased ability to expand effective channel capacity and an increased incentive to promote and subsidize interoperable radios.
- Sixth, the merger likely will reduce the merged firm's cost of audio content by eliminating bidding competition between Sirius and XM. As discussed below, reducing buyer-side bidding competition will not lead to a monopsonistic output reduction but instead will give the merged firm the incentive to reduce prices and increase output.
- Seventh, an analysis similar to the analysis of content costs also applies to the payments XM and Sirius make to automobile OEMs for the installation of integrated satellite radios in new automobiles. These costs likely will fall with the merger as a result of lessening the OEMs' bargaining leverage. In addition, distribution economics should improve if the merger leads to more new car buyers subscribing, as a result of lower prices, improved quality and increased promotion.
- Eighth, the cost of retail radios and their distribution will fall for a number of reasons, including lower resource costs for the merged firm, lower resource costs for the retailers, and an increased value obtained by the retailers in which the merged firm can share through making lower distribution payments.

102. It should be emphasized that analysis of these issues would be important even if the Commission erroneously were to conclude that the market should be defined solely as satellite radio. Even in that scenario, the merged firm would lack the incentives to exercise market power and harm consumers after the merger for these same eight reasons.

A. Inter-Modal Competition in the Short-Run and Longer-Run

103. As discussed in the market definition section, the merged firm will continue to face intense competition with other forms of audio entertainment, in the short-run and the longer-run, thereby eliminating any incentive to raise prices or reduce quality. Competition from other products reduces the fraction of lost customers that would substitute to the other merging firm.

104. At the same time, product differentiation between Sirius and XM reduces the incentives for pre-merger price competition between those firms and the incremental impact of the merger on those incentives.

- For consumers who have satellite radio installed in their vehicles by the manufacturer and integrated into the stereo system, switching to an integrated installation of the other service is impossible because of *de facto* exclusive relationships that Sirius and XM each have with various automobile manufacturers. Purchasing a plug-and-play receiver on the aftermarket is costly and provides a more complicated and less integrated set-up, and often inferior sound. For new subscribers who are shopping for new vehicles, it seems unlikely that very many consumers would choose a different vehicle rather than pay slightly more for satellite radio service.
- For consumers who have already purchased stand-alone aftermarket radios, switching is not impossible, but it does involve significant switching costs. For example, as discussed earlier, if one of the firms raised subscription fees by 10%, a little less than $16 per year, it would take a subscriber who had to pay $150 to purchase new radio equipment about 9 years to recover these equipment costs from the savings in subscription fees. **[[REDACTED** [redacted]]].[199]
- **[[REDACTED** [redacted]]].[200] **[[REDACTED** [redacted]]].[201] **[[REDACTED** [redacted]]].

105. In the aftermarket, Sirius and XM face competition for new subscribers from AM/FM radio and other devices like iPods/MP3 players, wireless phones and HD Radios as well as each other. The merger is not likely to raise significant competitive concerns in this segment for several reasons. First, the already strong inter-modal competition with these other devices will only intensify over time as a result of feature convergence. Satellite radios and wireless phones are adding more storage capability. Wireless phones are adding audio

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199 **[[REDACTED** [redacted]]].

200 **[[REDACTED** [redacted]]].

201 **[[REDACTED** [redacted]]].

streaming and wireless internet capability and gaining the ability to be integrated into auto sound systems; with the highly publicized introduction of the iPhone, the line between wireless phones and MP3 players is blurring.[202] iPods and other MP3 players are gaining more capability to access content (including radio-style podcasts) away from home (*e.g.*, at Wi-Fi hotspots and via transmissions from Ku Band satellite networks). Second, as discussed already, Sirius and XM are differentiated from each other by the exclusive content they each offer. Third, aftermarket radio competition between XM and Sirius will become less important over time even absent the merger. Aftermarket satellite radio purchasers are becoming a declining fraction of new subscribers over time as the market moves to integrated installations by automobile makers. It has been projected that aftermarket purchases will represent a rapidly declining share of new subscriber additions over the next several years.[203] In the first quarter of 2007, aftermarket net additions were only 21% of all net additions for XM and 35% of the total for Sirius.[204] Fourth, any small loss in competitive incentives in the aftermarket radio segment will be offset by the significant efficiency benefits discussed below, which will reduce the cost and raise the quality of satellite radio service and lead to more procompetitive pricing and investment incentives.

106. The merger also would not give the merged firm the incentive to restrict product quality, either by eliminating premium content or degrading the features offered on receivers. The merged firm must offer high quality products in order to attract and keep subscribers who otherwise would use a different audio entertainment product. For example, there will be continued incentives after the merger to offer such features as increased storage, more premium content, and traffic and weather programming. In fact, the merged firm intends to improve the offering of premium content by offering a best-of-both service. The merger also will permit the merged firm to improve signal quality and increase channel capacity.

B. Repositioning, Emerging Competition, and Entry

107. There is intense competition in the audio entertainment market today, and competition is increasing over time, not decreasing. This involves competition from new and emerging technologies. It also involves competitive responses by sellers using current technologies

[202] As a another example of how music phones are adding features, a new mobile phone, the Musiq by LG, soon to be offered by Sprint, not only can work as a music player, handle memory cards up to 2 gigabytes, can download music wireless, but it also comes with a built-in FM transmitter that can be used to play music over a vehicle's car radio. John Biggs, *Transmit Your Music to FM Right From Your Cellphone*, NEW YORK TIMES (July 12, 2007), *available at* http://www.nytimes.com/2007/07/12/technology/circuits/12phone.html?_r=1&oref=slogin (last visited July 12, 2007).

[203] *See, for example,* Goldman Sachs, *Conundrum squared: Why XM and Sirius should wait* (February 11, 2007) at Exhibit 6, which projects that retail growth will slow sharply in 2007 and afterwards, and (at 5) that retail will account for only 35% of XM's net additions in 2007, down from a (projected) 44% in 2006.

[204] XM Satellite Radio, *Form 10-Q, 1Q 2007*; Sirius Satellite Radio, *Form 10-Q, 1Q 2007.*

to extend or reposition their product offerings to compete more directly with satellite radio. This innovation and repositioning is continuous in the audio entertainment market. It means that the merged firm would be unable to profitably raise prices as a result of the merger. It also means that the demand elasticity facing the merged firm likely is rising over time, a factor which will further reduce the incentives to raise prices after the merger.

1. Product Extensions and Repositioning

108. The ability of competitors to reposition their products or create new variants to compete with the merged firm reduces the incentives for post-merger price increases.[205] If the merged firm were to attempt to raise price, providers of other existing audio entertainment technologies have the ability rapidly to extend or reposition their products to compete more directly with the type of services provided by the satellite radio. In fact, this type of product convergence is already taking place in the market and is increasing the demand elasticity facing the satellite radio providers over time.[206]

109. There are numerous ways in which this product extension and repositioning can and will occur, as discussed already. Repositioning by terrestrial radio through reducing the number of commercial minutes and rolling out HD Radio has already been discussed. The increased use of wireless phones as players of audio content is another example of repositioning. Content providers also are participating in this repositioning. Pandora has moved from being solely an Internet radio provider to distributing its content on Sprint's mobile phones. Yahoo! and Napster have begun offering their services on some AT&T phones. The growth in podcasts provided by Apple's iTunes Store is another example of content adapting to new distribution opportunities. Subscription services also have adapted by creating playlists in many different genres and functionality that allows individual subscribers to develop playlists customized to their own musical tastes. Slacker is now attempting to do something similar, providing access to "radio" channel content tailored to users' tastes so that it is readily available even when the subscriber is away from their PC, for example, at Wi-Fi hotspots. Encrypting HD Radio side channel broadcasts and selling them on a commercial-free, subscription basis may also be possible, if the Commission finalizes such rules.

2. Emerging Competition and Expansion

110. In some markets for technologically new products, competition decreases over time. For example, at one time, computerized word processing faced competition from self-correcting electric typewriters. The penetration rate for computerized word processing was

[205] *See* Merger Guidelines at § 2.21.

[206] The merger will further increase the demand elasticity by spurring competitors to engage in more innovation and investment.

low and many consumers saw little or no need to switch away from their electric typewriters. However, the market eventually tipped to computerized word processing and now electric typewriters are found mainly in antique stores. Similarly, at one time, the penetration rate of cable TV was very low. Only a relatively small fraction of consumers felt the need to move beyond over-the-air television at first.

111. Tipping of this sort to satellite radio is very unlikely. Competition in audio entertainment is increasing over time as other new technologies are developed and introduced to the market. Rapid technological change, including no doubt some that is not yet fully anticipated, is creating new ways to distribute digital content to consumers and giving consumers new options for manipulating and playing back that content. In fact, as discussed earlier, both companies downgraded their short-term subscriber projections in 2006.[207] Financial analysts have reduced their projections for satellite radio penetration to about 9% of the population or less at the end of 2010.[208] This downgrade is not surprising in light of the intense and growing competition, particularly iPods/MP3 players and more recently audio content-enabled wireless phones. This growing competition means that demand for satellite radio will become more elastic over time, not less. Moreover, satellite radio faces other substantial uncertainties. For example, we understand that in the ongoing Copyright Royalty Board proceeding, the RIAA/SoundExchange has asked for an increase in satellite royalties up to a level of 23% of revenues by 2012.[209]

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[207] XM revised its subscriber guidance for year-end 2006 on three occasions: first in May 2006, from 9 million down to 8.5 million (XM Satellite Radio Press Release, *XM Satellite Radio Holdings Inc. Revises Subscriber Guidance for 2006, Reaffirms Guidance For Positive Operating Cash Flow* (May 24, 2006), *available at* http://xmradio.mediaroom.com/index.php?s=press_releases&item=1317 (last visited July 17, 2007)); then in July down to 7.7-8.2 million (XM Satellite Radio Press Release, *XM Satellite Radio Holdings Inc. Announces Second Quarter 2006 Results* (July 27, 2006), *available at* http://xmradio.mediaroom.com/index.php?s=press_releases&item=1332 (last visited July 17, 2007)); and then again down to 7.7-7.9 million in November (XM Satellite Radio Press Release, *XM Satellite Radio Holdings Inc. Announces Third Quarter 2006 Results* (November 6, 2006), *available at* http://xmradio.mediaroom.com/index.php?s=press_releases&item=1382 (last visited July 17, 2007)). Sirius revised its year end subscriber guidance down from 6.3 million to 5.9-6.1 million in December 2006 (Sirius Press Release, *SIRIUS Provides Year-End 2006 Subscriber Guidance Range* (December 4, 2006), *available at* http://investor.sirius.com/ReleaseDetail.cfm?ReleaseID=220850 (last visited July 17, 2007)).

[208] Bank Testimony. The 2010 penetration figure is based on 26 to 28 million subscribers, and 2010 population of about 309 million, as reported by the Census Bureau, *Projected Population of the United States, by Age and Sex (2000-2050)*, *available at* http://www.census.gov/ipc/www/usinterimproj/natprojtab02a.pdf (last visited July 17, 2007). Indeed the trends of increasing inter-modal competition is seen over the longer-term history of satellite radio as well. In 1998, Yankee Group predicted 33 million satellite radio subscribers by 2004. *See* Merrill Lynch, *CD Radio: A Compelling Opportunity* (March 4, 1998) at 11. In fact, the industry ended with 4.4 million subs at the end of 2004 and is nowhere near that size even in 2007.

[209] *Rate Proposal For SoundExchange, Inc.*, In the Matter of Adjustment of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services, Before the Copyright Royalty Board, Docket No. 2006-1 CRB DSTRA (October 30, 2006), p. 3.