**Before the**
**UNITED STATES COPYRIGHT ROYALTY JUDGES**
**Library of Congress**
**Washington, D.C.**

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| ***In re*** | ) | |
| **DETERMINATION OF ROYALTY RATES AND TERMS FOR EPHEMERAL RECORDING AND DIGITAL PERFORMANCE OF SOUND RECORDINGS (*WEB IV*)** | ) | **DOCKET NO. 14-CRB-0001-WR (2016-2020)** |

TESTIMONY OF

# DANIEL L. RUBINFELD

Robert L. Bridges Professor of Law and Professor of Economics Emeritus at the University of California, Berkeley and Professor of Law at New York University

**PUBLIC VERSION**

**Witness for SoundExchange, Inc.**

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# I. Introduction

## A. Qualifications

1. My name is Daniel L. Rubinfeld. I am the Robert L. Bridges Professor of Law and Professor of Economics Emeritus at the University of California, Berkeley and Professor of Law at New York University. I have taught at U.C. Berkeley since 1983 and at NYU since 1999. During 1997-1998, I served as Deputy Assistant Attorney General for Economics at the Antitrust Division of the United States Department of Justice. As the chief economist for the Antitrust Division, I was responsible for supervising approximately 50 Ph.D. economists as well as a smaller group of non-Ph.D. economists and financial analysts. My responsibilities included co-drafting the 1999 efficiency-related amendments to the DOJ-FTC Horizontal Merger Guidelines and the 2000 DOJ-FTC Guidelines for Collaboration among Competitors. I also had ultimate responsibility for all of the economic analyses conducted by the Department of Justice in connection with its antitrust investigations and litigation. My responsibilities included continued monitoring of the consent decrees with respect to the ASCAP and BMI performing rights organizations.

2. I have previously taught at the University of Michigan, Wellesley College, and Suffolk University. I have served as visiting professor for various periods of time ranging from one week to one semester at law or law and economics programs at Stanford Law School, Hamburg University, Catholica University of Lisbon, the University of Bergen (Norway), and the Swiss National Bank's Study Program in Gerzensee, Switzerland.

3. I am the author of a variety of articles relating to antitrust and competition policy, law and economics, law and statistics, and public economics, as well as two textbooks, *Microeconomics* and *Econometric Models and Economic Forecasts*. I have served as co-editor of the *International Review of Law and Economics* and I currently serve as co-editor of the Harvard-based *Journal of Legal Analysis*.

4. I have been a fellow at the National Bureau of Economic Research (NBER), the Center for Advanced Studies in the Behavioral Sciences, and the John Simon Guggenheim Foundation. I currently teach courses in antitrust and law and statistics. I am a member of the American Academy of Arts and Sciences and a research fellow at the NBER. I have served in the past as President of the American Law and Economics Association.

5. I have on many occasions consulted for private parties and for a range of public agencies including the Federal Trade Commission, the Antitrust Division of the Department of Justice, and various state Attorneys General. In addition, I served as a member of the Blue Ribbon Panel on Digital Preservation (for the National Academy of Sciences). I have also been active in a variety of telecom proceedings for both the Department of Justice and for private parties and I have testified (in deposition) for Microsoft in copyright litigation relating to the Windows GUI (graphical user interface).

6. A copy of my full CV is attached as Attachment A, and a list of my prior testimony is attached as Attachment B.

### B. Assignment and Organization of the Study

7. I have been asked by SoundExchange to analyze the market for music streaming services and to provide my expert opinion on reasonable rates for the compulsory licensee fees to be set in this proceeding for the digital audio transmission of sound recordings by "non-interactive" webcasting services under the statutory licenses set forth in 17 U.S.C. §§ 112 and 114. My goal has been to develop a set of proposed rates for commercial and non-commercial webcasters for the period 2016-2020 for rights that comport with the objectives of the Webcasting IV proceeding that have been spelled out by the Copyright Royalty Board ("CRB") Judges.

8. In preparation for my work on this matter, I have studied the music streaming industry. I have examined trends in the industry over the past decade and I have seen how various parties view future industry trends. I have met in-person with the three major recording labels, Sony, Warner, and Universal, as well as one of the larger independent music labels. I have also subscribed to several services (both on-demand (or "interactive") streaming services and programmed or customized webcasting services) and have reviewed their websites for material that was informative with respect to business strategy and future industry trends.

9. I have structured my report to follow the procedures outlined in 37 C.F.R. § 351.10 part E. My report contains an overview of the analysis (outlined in Section II), a description of the economic framework underlying my analysis (Section III), the core of the methodology for evaluating potential benchmarks (Section IV), an analysis of potential benchmarks for commercial webcasting (Section V), the calculation of and adjustments to potential benchmarks (Section VI), and a summary of my proposals (Section VII). Details underlying the economic analysis appear in the appendices that follow.

## II. Summary of Analysis

10. I have relied on various types of evidence to draw my conclusions concerning reasonable rates for music streaming music services. First, I reviewed the final orders from Webcasting proceedings and the SDARS proceedings. Second, I reviewed various settlements applicable to the current license period through the year 2015 that were published in the Federal Register. Third, I have reviewed third-party materials, including literature within the confines of economics and literature relating to the webcasting industry. Fourth, I have reviewed and analyzed a substantial group of directly negotiated agreements between recorded music companies and music streaming services, and the performance data under such agreements.

11. While none of the agreements that I reviewed are perfect benchmarks for the statutory license (some involve differences in rights, some are bundled negotiations, some do not involve fully willing parties, but instead are influenced by the particular economic position of the licensee in this or other related markets, and some do not involve blanket licenses), they are nevertheless highly informative and they offer a spectrum of comparability.

12. My analysis proceeds as follows. I begin with an overview of recent developments in the music streaming industry. I explain that there has been increasing convergence between the so-called "interactive" services and the "non-interactive" services. I then describe the basic economic principles that I will apply in my analysis of potential webcasting benchmarks. In particular, I explain why I believe that a "greater of" formula that includes a per-play rate and a percentage of revenue provides an appropriate rate structure for commercial webcasting. I also propose a minimum fee.

13. There are many sources of evidence that could inform a benchmark analysis, given that there are a variety of licenses and settlements that permit the operation of the wide variety of music streaming services in the current market. I have considered the evidence and attempted to assess the relative comparability of these agreements.

14. Following this framework, I offer four tests consistent with the comparability factors set forth in the Web III Remand decision. These can be used to evaluate services that could serve as potential benchmarks. These tests place greatest emphasis on agreements between (1) willing buyers and sellers that are (2) farthest removed from the influence of the statutory license, but which (3) involve the same or similar parties as the statutory license, and (4) provide the same or similar rights as the statutory license.[1]

15. On the basis of my comparability analysis, I analyzed agreements and performance data under those agreements for music streaming services that were in operation between 2011 and 2014.

16. I examined the following categories of music streaming services.

    Category A: Services subject to music audio direct licenses that include on-demand functionality ("interactive" services)

    Amazon Music
    Beats
    Boomio
    Classical Archives
    Google Play All Access
    Microsoft/Xbox Music
    Midwest Tape/Hoopla
    MOG
    MySpace Music
    Rara
    Rdio
    Rhapsody

[1] See United States Copyright Royalty Judges, The Library of Congress, *In re Determination of Royalty Rates for Ephemeral Recordings and Digital Performance of Sound Recordings*, Docket no. 2009-1 CRB (Webcasting III), *Determination after Remand of Rates and Terms for Royalty Years 2011 – 2015* (hereinafter, "Web III Remand"), pp. 31-32.

ROK
Slacker
Sony Music Unlimited
Spotify
Yonder[2]

Category B: Programmed and/or customized webcasting services

iHeartRadio
Nokia MixRadio

Category C: Directly licensed music video services streaming audio content, including those services streaming user-generated content under the Digital Millennium Copyright Act ("DMCA") safe harbor provision

VEVO
YouTube (Free and Subscription)
Other music video services

Category D: Other services

Services operating pursuant to the Webcaster Settlement Act ("WSA") pureplay settlement agreement
Terrestrial radio
Small streaming services

17. In addition to Warner's agreement with iHeartMedia (formerly, Clear Channel) for the iHeartRadio service and the major record labels' agreements with Nokia for its MixRadio service, I was going to consider the Apple's iTunes Radio service agreements between Apple and the major record labels as part of Category B. It is my understanding, however, that the record companies asked Apple to waive certain contractual provisions that limit or prohibit the submission or reliance upon those agreements in connection with this proceeding, and that Apple declined to do so. Accordingly, I have not included in this report any analysis relating to those agreements.

18. The directly licensed agreements between record companies and the Category A set of services offering on-demand functionality ("interactive" services)[3] are the most appropriate benchmarks for this proceeding for several reasons. These agreements – representing the

[2] For newly released services Amazon Music, Boomio, ROK, and Yonder, performance data is not yet available. Accordingly, while they are considered part of Category A, they are not factoring into the calculated rates for such services. I reserve the right to include additional analysis relating to these services when I receive performance data for them.

[3] I understand that the legal question of what constitutes an "interactive" service is beyond the scope of these proceedings. In this report, I use "interactive" as shorthand to refer to those services that offer on-demand streaming. Likewise, I use "non-interactive" to refer to those programmed and/or customized webcasting services, even if there may be some question as to whether their functionality is DMCA-compliant.

majority of directly licensed services – were all struck between willing licensees and licensors. Moreover, because they specify functionality that is not DMCA-compliant, direct licensing was required; this minimized the effect of the statutory shadow because the service could not immediately fall back to the statutory license if an agreement was not reached. As a result, the agreements in Category A are not directly influenced by the existing statutory license rates. And as described further below, the other potential benchmark agreements possess a number of characteristics that make them substantially less suitable as comparable benchmarks.

19. For the services listed in Category A, the report provides a series of calculations using contractual and performance data for these services. Using existing contracts with the services, I take the minimum stated per-play rate in the agreement (when specified). I then calculate an adjusted minimum per-play rate for each directly licensed service using the monthly performance data. In doing this calculation, I add to the stated per-play rate, where available, the per-play value of other quantifiable contractually-specified considerations such as guaranteed advertising or non-recouped advances. This type of consideration for record labels' content is not captured by the minimum per-play rate and therefore needs to be added for purposes of determining a proposed benchmark for the statutory rate.

20. To apply the Category A set of interactive agreements as benchmarks, I also adjusted their rates to account for the value that consumers place on interactivity, the number of royalty-bearing plays in comparison to statutory services, the differences between independent and major record company deals, and the anticipated growth of statutory and directly-licensed services. I conclude that, when appropriately adjusted, the interactive service agreements support rates for commercial services that meet the objectives set forth by the CRB in the Commencement Notice for this proceeding, as well as the principles and critiques of prior analyses put forward by the CRB Judges in the prior webcasting proceedings.

21. I recognize that the CRB in prior proceedings, including Web III Remand, has questioned the use of agreements with interactive services as benchmarks for statutory webcasting ("non-interactive") services. Nonetheless, I believe it is appropriate in this proceeding to place greater reliance on interactive benchmarks. As noted above, there is no perfect benchmark, but when compared to the alternatives, the interactive agreements offer the most comparable set of benchmarks for this proceeding. First, the difference in rights between interactive and non-interactive services are less profound than in prior proceedings because there has been a substantial convergence in functionality and the ways in which consumers engage with non-interactive and interactive services. As a result, consumers are likely to view alternative services as relatively close substitutes for each other. Second, competition among and substitution between services have intensified with the continued entry of new services and with the industry transition from sales of downloads and CDs to streaming. Any supposed promotional benefits to CD or download sales from statutory services will be increasingly limited, and any potential for promotion today to increase subscriptions for on-demand streaming services will be limited to the extent that on-demand and non-interactive services converge over time. And finally, the other available market-based agreements and evidence tend to provide less comparable benchmarks.

22. Also informative are the directly licensed, programmed and/or customized webcastiong radio agreements between Warner and iHeartMedia with respect to its iHeartRadio service, and between record labels and Nokia for its MixRadio service, corresponding to Category B. These services offer webcasting that can be customized and personalized to each individual user's musical tastes.

23. Similar to the Category A services, I have made certain adjustments to the rates of the iHeartRadio agreement. I have adjusted the stated per-play rate in the agreement to take into account additional consideration, [redacted] Also, [redacted] Thus, like the interactive agreements, adjustments must be made to this "webcasting agreement" before it can be used as an appropriate benchmark, to reflect differences between the rights in the agreements and the statutory license.

24. Although informative, ultimately the Warner-iHeartMedia agreement is a less appropriate benchmark than the Category A set for several reasons. First, [redacted] Indeed, iHeartMedia had the option of electing the statutory license and iHeartRadio streams other record labels' content under the statutory license. Second, [redacted] this makes the agreement a less appropriate benchmark. Third, [redacted]. Finally, iHeartMedia is a "power buyer;" iHeartMedia's position in terrestrial radio makes its bargaining position unique.

25. Record labels' agreements with Nokia for its MixRadio service are also informative market evidence. The agreements with Nokia involve the majority of the same sellers and the buyer, Nokia, offers a customized webcasting service comparable to those operating under the statutory license. The functionality offered by Nokia MixRadio is very similar to that offered by Pandora and other customizable streaming services, and thus the rights at issue are comparable to the rights under the statutory license. The Nokia agreements are, however, unique in certain respects. [redacted] Notwithstanding such differences, the rates in the Nokia agreements for its non-interactive streaming service are instructive.

26. In sum, the rates for these directly licensed non-interactive services in Category B are informative and confirm the reasonableness of my proposed rates based on the Category A set of services.

27. Category C includes directly licensed music video services streaming audio content, including those services streaming user-generated content under the DMCA "safe harbor" provision. Specifically, I include and analyze YouTube and Vevo in this group of services. These agreements raise a number of significant issues that complicate relying upon them as comparable benchmarks. First, with respect to YouTube, due to the time, effort, and expense associated with take-down notices and the "whack a mole" problem, the safe harbor provision results in a substantial downward pull on the negotiated rates. Under the safe harbor, copyright owners must send to sites like YouTube hosting user-generated content notices of specific infringing works on their sites. Material that is taken down, however, often reappears, within minutes, on the same site. Record companies send millions of takedown notices a year to sites hosting infringing user-generated content. Even if services operating under the safe harbor provision enter into direct agreements with rights holders, as is the case with YouTube, one would expect that the resulting rates will be depressed, which the market evidence confirms. In particular, [redacted]

28. Furthermore, the statutory license at issue here pertains to audio and not video. Video services are different than audio streaming services, and rights holders negotiate differently with video services than with streaming audio services. Other music video services which raise similar concerns are Amazon Video, iHeartMedia Video, Fuse, MTV Online, Music Choice, Qello, Stingray, Vidzone, Yahoo, and Zuus.

29. I have calculated a set of effective rates for YouTube and Vevo in Category C. Because these services do not have minimum per-play rates, I calculate an effective per-play rate by dividing the total compensation for licensed content by the total number of applicable plays. I also have adjusted those rates for on-demand functionality.

30. Category D includes a variety of additional services which I have not considered in my benchmark analysis. These include:

    a. Services operating pursuant to the WSA pureplay settlement agreement, such as Pandora. I place relatively little weight on the pureplay rates flowing from the Webcaster settlement, given that as a term of those agreements and by statute, they cannot be used as benchmarks in this proceeding.[4] This makes them not comparable.

    b. Digital music services for which streaming is a non-existent part of their commercial offerings, such as digital download services.

[4] 2009 Webcaster Settlement at 34796.

c. Services for which there is no directly licensed agreement between willing buyers and willing sellers which could serve as a potential benchmark, such as terrestrial radio.

d. Small streaming services that have no meaningful role in the market at this point in time (from a revenue generation perspective): 7Digital, Guvera, TurnTable.FM, Neurotic Media, Pasito, Arkiv Music, Instant Media Network, and Overflow.[5]

e. Services streaming user generated audio content under the DMCA safe harbor provision.

31. Based on the Category A set of services, the proposed rates for sound performance recordings are the greater of a payment based on the adjusted minimum per-play rate, and a percentage of revenue that falls (conservatively) within the low end of the range of percentages of revenue paid by these benchmark services. The addition of a compensation branch based on revenue allows the per-play rate to be lower than it would be without the revenue branch.

32. Specifically, I propose that monthly payments be the greater of (1) a per-play rate specified below times the number of plays in the month, and (2) a percentage of the service's revenue. The proposed rates, based upon the Category A set of benchmark agreements and performance data covering June 2013–May 2014, are as follows:

| | **Per-play Rate** | **Percentage of Revenue** |
|---|---|---|
| 2016 | $0.0025 | 55% |
| 2017 | $0.0026 | 55% |
| 2018 | $0.0027 | 55% |
| 2019 | $0.0028 | 55% |
| 2020 | $0.0029 | 55% |

33. In addition, for commercial webcasters I propose the same minimum fee as in the past, i.e., a recoupable $500 per each station or channel in a calendar year. For noncommercial webcasters, I am not aware of any market license agreements that would apply in the next rate period that could serve as potential benchmarks. I therefore propose to continue the minimum fee of $500 per station or channel, up to a maximum usage of 159,140 aggregate tuning hours. The rates I propose for commercial webcasters shall apply to usage in excess of 159,140 hours per month. For most if not all non-commercial webcasters, this $500

[5] While I do not include such services as benchmarks, their low revenues result in no material effect on my calculations. However, I do look at some of their retail price points for purposes of calculating the interactivity adjustment. This is conservative, as some of these on-demand services, such as Pasito, have retail prices at the high end of the price spectrum.

minimum likely will be the only leg of the formula that applies, because their monthly tuning hours will be below 159,140 hours. As I will show below, the $500 minimum fee has not discouraged entry into the webcasting industry, and the real, inflation-adjusted rate has been declining over time.

# III. Applying Economic Principles in the Analysis of the Music Industry

## A. The Market for Digital Music Usage

***1 -- Music usage is diverse and available from a variety of sources.***

34. In today's world, music is available in a variety of ways. Consumers can purchase CDs, vinyl records, and digital downloads. They can listen to terrestrial or satellite radio. They can also purchase access to digital music through a variety of paid streaming services, many of which provide access on a mobile or desktop basis and allow for temporary offline access. Streaming music also is available through ad-supported or free-to-consumer offerings. In fact, many streaming music services now have both ad-supported and paid-subscription offerings (the combination is sometimes referred to as a "freemium" model). Consumers also can access music online by way of online music videos, such as on websites like YouTube. Finally, some consumers continue to gain access to unauthorized content through pirate or unlicensed services.

35. The governing statute (17 U.S.C. § 114; "Section 114") contrasts "interactive" services, which are not eligible for the statutory license, with "non-interactive" webcasting services, which are eligible. "Non-interactive" (also known as "statutory" or "DMCA-compliant") webcasting services may elect to pay royalties in accordance with the rates and terms set by the Copyright Royalty Judges.

36. Notably, although non-interactive services are eligible to operate under the statutory license, they are not obligated to do so. These services always have and sometimes utilize the option of negotiating direct license agreements with copyright owners. Although these types of agreements normally specify that the services are "DMCA compliant," in some cases the record companies have agreed to relax certain DMCA requirements in their directly licensed agreements with such services.

37. Many so-called "interactive" services offer music "on-demand," allowing listeners to choose freely from broad libraries of songs to build their own playlists. I understand that interactive services are not eligible for the statutory license and consequently require direct licenses. Examples include most of the service offerings provided by Rhapsody, Spotify, Rdio, and Beats Music. I say "most" because many of these services now offer products that provide programmed and customized streaming music, meaning that a user does not have to (and sometimes cannot) demand that certain sound recordings be played on-demand. As explained above, I will on occasion use the terms "interactive" and "non-interactive" as shorthand to describe those services offering on-demand streaming and those services that do not. I note, however, that the distinction is to a certain degree artificial, as "interactive" services also provide certain non-on-demand offerings, and some

"non-interactive" services offer enhanced functionality that allows the user to personalize and customize his or her programming.[6]

38. Many interactive services also offer both free ad-supported tiers as well as paid subscription tiers. These services' agreements with rights holders are designed to encourage the "conversion" of users from the free tiers to the paid subscription tiers, because more revenue is generated from paid subscribers than those listening to advertising.

39. Other on-demand services operate under the DMCA "safe harbor" provision by indexing and streaming user-supplied content.[7] Due to the time, effort, and expense of "takedown" notices pursuant to the DMCA and the "whack-a-mole" problem, rights holders have limited abilities to withhold content from these services.[8] Thus, for example, although some rights holders have entered into agreements with services such as YouTube, these agreements are closer to a compulsory license than the direct and voluntary agreements between record companies and licensees, such as those agreements with Spotify or Rhapsody.

40. A number of entities provide personalized or customized webcasting services. Apple's iTunes Radio service, iHeartMedia's iHeartRadio service, Nokia's MixRadio, and Pandora are notable examples. These services do not provide on-demand functionality, but instead provide playlists that are customizable according to user input (such as "likes" or other choices). In addition, a variety of terrestrial radio stations provide internet "simulcasts" that are derived from their terrestrial programming.

41. In addition to the leading music streaming services, consumers can listen to programmed radio offered by terrestrial radio as well as satellite radio.

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[6] See, e.g., Web III Remand, pp. 47-48, footnote 39.

[7] I understand that the "safe harbor" provision in Section 512 of the DMCA provides that intermediaries may not be liable for damages for subscribers' infringement, if they otherwise satisfy the notice and takedown requirements of the statute.

[8] See, e.g., Chris Castle, *YouTube's DMCA Abuse and Indie Labels: How Google is Blowing it for the Honest People*, Word Press (June 18, 2014), http://musictechpolicy.wordpress.com/2014/06/18/youtubes-dmca-abuse-and-indie-labels-how-google-is-blowing-it-for-the-honest-people/; Gordon Platt, *Why Google Might Finally Act Against Piracy on YouTube*, Creativity Tech (Aug. 25, 2014), http://creativitytech.com/why-google-might-finally-act-against-piracy-on-youtube/; Chris Castle, *"Out of Balance": @beggarsgroup Martin Mills' Rallying Cry on DMCA Abuse at Canadian Music Week*, Word Press (May 10, 2014), http://musictechpolicy.wordpress.com/2014/05/10/out-of-balance-beggarsgroup-martin-mills-rallying-cry-on-dmca-abuse-at-canadian-music-week/; William Buckley Jr., *Online Piracy Finally In the Crosshairs*, Huffington Post (April 4, 2014),http://www.huffingtonpost.com/william-buckley-jr/online-piracy-finally-in-_b_5086820.html?view=print&comm_ref=false; Nick Bilton, *Internet Pirates Will Always Win*, The New York Times (Aug. 4, 2012), http://www.nytimes.com/2012/08/05/sunday-review/internet-pirates-will-always-win.html?_r=0 (all accessed Sept. 26, 2014); Stephen Carlisle, *DMCA "Takedown" Notices: Why "Takedown" Should Become "Take Down and Stay Down" and Why It's Good for Everyone*, Nova Se. Univ. (July 23, 2014), http://copyright.nova.edu/dmca-takedown-notices/ (accessed Sept. 30, 2014), and Statement of Cary H. Sherman, Chairman and CEO, Recording Industry Association of America, U.S. House of Representatives, Committee on the Judiciary, Subcommittee on Courts, Intellectual Property, and the Internet, September 18, 2013.

***2 -- Music usage has evolved since the prior rate proceeding***

42. There has been substantial evolution in the webcasting industry and in the technology that supports streaming (from 2G to 3G to 4G-LTE). As a result, streaming has grown considerably relative to sales of downloads and CDs, the sales of which have been falling; see Exhibit 1. For example, in 2005 streaming comprised only 1% of industry revenues. By 2013, streaming represented 23%.

43. New services have been entering the U.S. market and competition has increased over the past five years. Exhibit 2 summarizes the entry dates of major webcasting services. For example, in 2011 iHeartMedia introduced its iHeartRadio service – originally as primarily a vehicle to simulcast its terrestrial radio stations, but now offering a variety of customization options. iHeartMedia recently announced that it has more than 50 million registered users.[9] Spotify began its operation in Sweden in 2008, but did not enter the U.S. market until 2011. Spotify recently announced that it has 10 million paid subscribers, worldwide.[10] Nokia launched its non-interactive MixRadio service in the U.S. in September 2012.[11] Apple entered with its non-interactive iTunes Radio service in September 2013 and is expected to offer an interactive streaming service with its acquisition of Beats Music.[12] Google introduced its on-demand "Google Play" service in May 2013.[13] In March 2014, Samsung announced a new service (based on Slacker's existing service) for customers of its Galaxy line of smartphones and tablets.[14] In June 2014, Amazon introduced an on-demand service with a limited selection of older music as part of its "Prime" subscription service.[15] In the summer of 2014, YouTube announced

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[9] *iHeartRadio Surpasses 50 Million Registered Users*, Friday Morning Quarterback, Inc. (June 17, 2014), http://www fmqb.com/article.asp?id=2804380 (accessed June 19, 2014).

[10] *Spotify hits 10 million global subscribers*, Spotify (May 21, 2014), https://press.spotify.com/int/2014/05/21/spotify-hits-10-million-global-subscribers/ (accessed Sept. 30, 2014).

[11] Ingrid Lunden, *Play It Again, Sam? Nokia Launches Free Music Streaming Service In U.S.*, Tech Crunch (Sept. 4, 2012), http://techcrunch.com/2012/09/04/play-it-again-sam-nokia-launches-free-music-streaming-service-in-u-s/

(accessed Oct. 2, 2014).

[12] Billy Steele, *iTunes Radio launches September 18th alongside the release of iOS7*, Engadget (Sept. 10, 2013), http://www.engadget.com/2013/09/10/itunes-radio-launches-september-18th/; Ellis Hamburger, *Apple announces iTunes Radio, a streaming music service to compete with* Pandora, The Verge (June 10, 2013), http://www.theverge.com/2013/6/10/4414762/apple-announces-iradio-streaming-music-service; *Apple to Acquire Beats Music & Beats Electronics*, Beats Music (May 28, 2014), http://blog.beatsmusic.com/apple-to-acquire-beats-music-beats-electronics/.

[13] Dante D'Orazio, *Google Play Music All Access hand-on: should you switch from Spotify or Rdio?*, The Verge (May 15, 2013), http://www.theverge.com/2013/5/15/4334790/google-music-all-access-hands-on-versus-spotify-rdio/in/4095431 (accessed Sept. 30, 2014); Amanda Holpuch, *Google Play Music All Access: Google's streaming music service – live* blog, The Guardian (May 15, 2013), http://www.theguardian.com/technology/2013/may/15/google-i-o-developer-conference-live (accessed Sept. 29, 2014).

[14] Nicole Lee, *Samsung's Milk Music internet radio service is only for Galaxy devices (video)*, Engadget (Mar. 7, 2014), http://www.engadget.com/2014/03/07/samsung-milk-music/ (accessed Oct. 1, 2014).

[15] Contessa Gayles, *Amazon launches Prime streaming music* service, CNN (June 12, 2014), http://money.cnn.com/2014/06/12/technology/enterprise/amazon-prime-music/index.html (accessed Oct. 1, 2014).

plans to introduce its own new premium subscription service, and shortly thereafter (September 15, 2014), Deezer – second only to Spotify internationally – entered the U.S. market on the high-definition Sonos platform.[16]

44. Along with rapid growth have come not only a host of new entrants, but also some consolidation and new partnerships which increased the effectiveness of those competitors remaining in the market. The partnership of T-Mobile with several music streaming services,[17] is one recent example. The acquisitions of Beats Radio by Apple and Songza by Google are two other recent examples.[18]

45. Services vary in the size of the available repertoire, and improvements in broadband penetration, wireless networks, and mobile device technology have led to significant improvements in the means by which users can best access that repertoire. Moreover, technology has made it possible for services such as Google Play to make the users' library of owned music available for listening on a variety of computers and mobile devices.

46. As technology has evolved, consumers have changed their music consumption behavior. Physical sales of music through CDs have dramatically fallen, being replaced to a significant degree by digital downloads and even more so by streaming. For example, total industry revenues fell nearly 2% in 2013 whereas streaming revenues grew over 31% percent, from 17% to 23% of total industry revenues; see Exhibit 3. For the first half of 2014, industry revenues shrunk nearly 5%; download sales of albums and tracks fell almost 12%, while subscription streaming revenues increased more than 22%, and ad-supported streaming revenue increased by more than 55%.[19] Industry observers expect that streaming will be the dominant means of listening to digital music, and that streaming will constitute the substantial majority of industry revenues by 2019.[20]

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[16] See Glenn Peoples, *Deezer Finally Coming to America on Sept. 15*, Billboard (Sept. 10, 2014), http://www.billboard.com/biz/articles/news/digital-and-mobile/6244191/deezer-finally-coming-to-america-on-sept-15 or *Deezer To Launch In U.S. Sept. 15th with Hi-Def Streaming Exclusively On Sonos*, Hypebot, http://www hypebot.com/hypebot/2014/09/deezer-to-launch-in-us-sept-15th-with-hi-def-streaming-exclusively-on-sonos html?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+typepad%2FDqMf+(hypebot) (both accessed Sept. 30, 2014).

[17] See *T-Mobile Is Setting Music* Free, T-Mobile, http://www.t-mobile.com/offer/free-music-streaming html **Error! Hyperlink reference not valid.** (accessed Oct. 4, 2014).

[18] *Apple to Acquire Beats Music & Beats Electronics*, Beats Music (May 28, 2014), http://blog.beatsmusic.com/apple-to-acquire-beats-music-beats-electronics/; Amit Chowdhry, *Google Has Acquired Music Streaming Startup Songza*, Forbes (July 1, 2014), http://www forbes.com/sites/amitchowdhry/2014/07/01/google-has-acquired-music-streaming-startup-songza/.

[19] Ed Christman, *U.S. Music Revenues Down Nearly 5%, Says RIAA*, Billboard (Sept. 25, 2014), http://www.billboard.com/biz/articles/news/record-labels/6266341/us-music-revenues-down-nearly-5-says-riaa (accessed Sept. 30, 2014).

[20] See, e.g., *Why Digital Music Services Always Steal Each Other's Customers*, Word Press (Aug. 22, 2014), http://musicindustryblog.wordpress.com/2014/08/22/why-digital-music-services-always-steal-each-others-customers/ (accessed Sept. 30, 2014).

47. Streaming music services utilize a variety of business models. Some rely heavily on advertising revenues, while others emphasize subscription revenues. Some emphasize short-run profitability, while others focus on the long-run. In terms of size, Spotify has been the most successful interactive service, relying heavily on its premium subscription service to generate the bulk of its revenues. However, Pandora's listener base is substantially larger than Spotify's.

48. Exhibit 2 shows that numerous music streaming services have entered the industry in recent years. There are no prohibitive barriers to entry into the music streaming industry, given the ability of new entrants to emulate successful services, decreased technology costs, and the continuing availability of a statutory license. Listeners can try new services (relatively easy to do through downloading apps on their mobile devices and through Internet browsers) and they can use more than one service. Moreover, entry barriers are especially low for online broadcasters, particularly those who simulcast their programming over the Internet.

49. I note, however, that listeners can become "locked" in to services such as Pandora after they have expressed their likes and dislikes for particular music genres or artists, resulting in highly customized stations or playlists. Because creating such stations and playlists may have taken considerable time and energy on the user's behalf – potentially over a multi-year period – the user may have little incentive to switch to a new service. According to Pandora, one of its "competitive strengths" is its substantial "share of Internet radio listening." By April 2014, Pandora indicated that it achieved a 77% share of "Internet radio" streams, up from less than 60% at the time of its IPO.[21] Indeed, since 2011, Pandora's self-reported share has increased substantially, and averaged above 70% throughout 2013; see Exhibit 4.

50. It is not surprising, therefore, that major new entrants have been companies such as Google, Apple, and Amazon that have substantial resources and access to substantial groups of users of complementary services. New entrants to the webcasting industry can choose to operate services that have "on-demand" functionality or not. To illustrate, Apple chose not to include on-demand functionality with its iTunes Radio product, but then subsequently acquired an on-demand subscription streaming service in Beats Music. Along similar lines, Slacker offers a free non-interactive service and a paid interactive service. Finally, Spotify offers a free interactive service for desktop computers and a free, but less interactive, mobile service.[22]

51. To sum up, the review of developments in the industry in the past five years makes it clear that the number of and consumer usage of music streaming services (also known as "access" services) have grown significantly in the recorded music industry both in the

[21] Pandora Media Investor Presentation Q4 CY2013, p. 11.

[22] Spotify's free (ad-supported) mobile service provides elements of interactivity. A listener can select an album or playlist to play on shuffle, but cannot select a specific song. Shane Cole, *Spotify rolls out subscription-free "Shuffle play" mode for iOS*, Apple Insider (Jan. 8, 2014), http://appleinsider.com/articles/14/01/08/spotify-rolls-out-subscription-free-shuffle-play-mode-for-ios (accessed Oct. 1, 2014).

aggregate and with respect to other revenue sources for copyright owners. That growth is likely to continue at least through the end of the next rate period.

***3 -- Interactive and non-interactive services are converging.***

52. The offerings of the statutory customized/personalized services such as Pandora and "interactive" services such as Spotify have been *converging*, in terms of functionality and the ways in which consumers engage with these services, since 2009 when the last rate proceeding was held. There is substantial evidence supporting this convergence theme, as I spell out in the paragraphs that follow.

53. *Functionality has become more similar over time.* Both "interactive" and "non-interactive" services shape the music played according to the listener's preferences. Services such as Pandora, which are "non-interactive," offer radio and playlists (lean back options) to both free and paid subscribers. However, due to their intensive individual customization, these services effectively and increasingly offer functionality that is similar to that offered by "on-demand" services. When a user chooses a song, services such as Pandora create a playlist comprised of songs determined to be related to the chosen song. Pandora learns about individual tastes when a listener has skipped a song, has provided a "thumbs up" or "thumbs down," or when Pandora determines that the user has stopped listening.[23] Indeed, some industry observers have found that Pandora's substantial degree of customization and personalization can come close to replicating the *lean-forward* experience of Spotify's on-demand service in a *lean-back* way through customized but ostensibly DMCA-compliant webcasting.[24]

54. Slacker, Pandora, and iHeartRadio began as purely radio services. By 2014 all had some component of on-demand playing. For example, Slacker Premium launched in 2011,[25] offering full on-demand capability. Pandora Premieres, which launched in 2013, allows on-demand playing of certain featured, pre-release albums.[26] Although mostly relying on programmed and personalized webcasting, iHeartRadio began in 2009 to feature music videos that could be played on-demand.[27]

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[23] Michael Hickins, *Pandora's Improved Algorithms Yield More Listening Hours*, CIO Journal, WSJ.com (Apr. 1, 2014), http://blogs.wsj.com/cio/2014/04/01/pandoras-improved-algorithms-yield-more-listening-hours/ (accessed Sept. 26, 2014). See also *Why we're not playing…*, Pandora, http://help.pandora.com/customer/portal/articles/24604-%22why-we-re-not-playing-%22 (accessed Sept. 30, 2014).

[24] *Pandora's Mobile Makeover: Playing to the 'Lean-Forward' Listener*, Billboard (Oct. 29, 2012), http://www.billboard.com/biz/articles/news/1083229/pandoras-mobile-makeover-playing-to-the-lean-forward-listener (accessed Sept. 30, 2014).

[25] Jonathan Seff, *Slacker launches Slacker Premium Radio on-demand service*, Macworld (May 17, 2011), http://www macworld.com/article/1159914/slacker_premium_radio html (accessed Sept. 30, 2014).

[26] Aaron Souppouris, *Pandora launches 'Premiers,' will stream albums before they go on sale*, The Verge (May 21, 2013), http://www.theverge.com/2013/5/21/4352064/pandora-premieres-pre-release-album-streaming-station (accessed Sept. 30, 2014).

[27] *iHeartRadio Adds Video*, All Access Music Group (Oct. 12, 2009), http://www.allaccess.com/net-news/archive/story/65170/iheartradio-adds-video (accessed Sept.30, 2014).

55. "Interactive" services, on the other hand, are increasingly offering personalized webcasting services incorporating algorithmic or human curated playlists that reflect listeners' previous choices and/or expressed taste preferences.

56. Major "interactive" services also offer "lean back" experiences and rely on recommendation algorithms, which many music consumers consider to be an important and valuable feature.[28] "Lean-back" functionality also has become increasingly important as mobile applications (including automotive) have grown, given that in such contexts, the user may not be able to actively engage with the service and select particular songs.

57. Spotify initially only offered on-demand subscriptions in the U.S., adding radio shortly after launching in July 2011.[29] Later that year it added The Echo Nest – an algorithmic recommendation engine – which provides Spotify personalization functionality similar to that offered by Pandora and others.[30] In 2012 Spotify added a "thumbs up/thumbs down" option, as well as radio stations based on albums, playlists, or a particular artist or song.[31] Especially on the mobile app, radio became a primary service on Spotify, whereas previously it had only been an extra feature. Recently, in late 2013, Spotify allowed a limited on-demand capability for its free mobile app (previously on-demand was only free on the desktop).[32]

58. Customized algorithmic "lean back" experiences have grown in importance at other major services as well. For example, iHeartMedia launched "New iHeartRadio" in 2011, offering Pandora-style personalized stations.[33]

59. Slacker's original primary product was its large collection of curated stations and genre-based stations. But in 2013 Slacker made a push towards algorithm radio as part of a major

[28] *Echo Nest, Spotify link may target Pandora*, Boston Globe (Mar. 10, 2014), http://www.bostonglobe.com/business/2014/03/09/highlight-from-betaboston/7NtmCWZ9ysDKvj1EnM55ZM/story html (accessed Oct. 1, 2014).

[29] Jennifer Bergen, *Spotify rolls out Artist Radio feature: It's nice, but it's no Pandora*, Geek (July 28, 2011), http://www.geek.com/news/spotify-rolls-out-artist-radio-feature-its-nice-but-its-no-pandora-1407533/ .

[30] Terrence O'Brien, *Echo Nest is the man behind the Spotify Radio curtain*, Engadget (Dec. 16, 2011), http://www.engadget.com/2011/12/16/echo-nest-is-the-man-behind-the-spotify-radio-curtain/ .

[31] Glenn Peoples, *Spotify Radio Improves With Thumbs-Up (or Down) Function*, Billboard (Aug. 13, 2012), http://www.billboard.com/biz/articles/news/1084183/spotify-radio-improves-with-thumbs-up-or-down-function .

[32] Ellis Hamburger, *Spotify announces free streaming on Android and iPhone, but only in Shuffle mode*, The Verge (Dec. 11, 2013), http://www.theverge.com/2013/12/11/5199692/spotify-announces-free-streaming-on-android-and-iphone-but-only-in (accessed Sept. 30, 2014).

[33] *Clear Channel Radio Releases Beta Of The New iHeartRadio*, iHeartMedia (Sept. 8, 2011), http://www.clearchannel.com/Pages/Clear-Channel-Radio-Releases-Beta-Of-The-New-iHeartRadio.aspx (accessed Sept. 30, 2014).

product overhaul, launching an entirely new interface and adding a "fine tune" slider to customize its stations.[34]

60. Rhapsody introduced "unRadio" in 2014, which is an entirely separate product with its own subscription plan which offers curated radio playlists as well as unlimited skips, no advertisements, and caching of the selected songs.[35]

61. There has also been a trend towards mood-based and/or recommended stations. The ability to choose stations based on mood or activity, such as "driving," "working out," or "winding down" has become more and more common. For example, Songza recommends various playlists based on time of day and mood or activity.[36] It offers playlists for activities such as waking up, working out, commuting, concentrating, entertaining, unwinding, and sleeping. As noted, Songza was recently acquired by Google. Similarly, Slacker added the mood-based "My Vibe" feature in 2013;[37] iHeartRadio's mood-based version, "Perfect For," was added in 2013;[38] iHeartRadio added station recommendations with "For You" in 2014;[39] and Pandora added recommended stations in 2014.[40]

62. Many of the services appear to derive recommendations from third-party vendors. For example, The Echo Nest provides recommendations to iHeartMedia and Sirius for their non-interactive services, as well as to other major interactive services.[41] Other entities such

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[34] Josh Constine, *Slacker Combines Best of Spotify, Pandora, XM In "Complete Music Service" Update For Web, Apps, Cars*, Tech Crunch (Feb. 13, 2013), http://techcrunch.com/2013/02/13/slacker-complete-radio/ (accessed Sept. 27, 2014).

[35] *Introducing Rhapsody unRadio*, Rhapsody (June 18, 2014), http://news rhapsody.com/2014/06/18/introducing-rhapsody-unradio/ (accessed Sept. 24, 2014).

[36] See Ben Sisario, *Pandora Faces Rivals for Ears and Ads*, The New York Times (June 20, 2012), http://www nytimes.com/2012/06/21/business/songza-and-spotify-challenge-pandora-for-ears-and-ads html?_r=0 (accessed Oct. 1, 2014); Hayley Tsukayama, *TechBits: Songza adapts the music to your mood*, The Washington Post (June 23, 2012), http://www.washingtonpost.com/techbits-songza-adapts-the-music-to-your-mood/2012/06/23/gJQAYRzKyV_story.html (accessed Oct. 1, 2014).

[37] *Slacker Radio (for Android)*, PC Magazine, http://www.pcmag.com/article2/0,2817,2415631,00.asp (accessed Sept. 27, 2014).

[38] *iHeartRadio Unveils New "Perfect For" Feature—Now Users Can Listen To Stations Based On Their Moods And Activities*, iHeartMedia (Jan. 7, 2013), http://www.clearchannel.com/Pages/IHeartRadio-Unveils-New-"Perfect-For"-Feature—Now-Users-Can-Listen-To-Stations-Based-On-Their-Moods-And-Activities.aspx (accessed Sept. 30, 2014).

[39] *Introducing iHeartRadio 5.0, Offering a More Personalized Listening Experience for Users*, iHeartMedia (June 16, 2014), http://www.clearchannel.com/pages/Introducing-iHeartRadio-5-0-Offering-a-More-Personalized-Listening-Experience-for-Users.aspx (accessed Sept. 30, 2014).

[40] Cody Lee, *Pandora adding personalized station recommendations to its mobile apps*, iDownloadBlog (Jan. 16, 2014), http://www.idownloadblog.com/2014/01/16/pandora-recommendations/ (accessed Sept. 27, 2014).

[41] *Our Company*, Echo Nest, http://the.echonest.com/company/ (accessed June 9, 2014). After its recent acquisition by Spotify, some major service operators such as Beats Music announced intentions to terminate their relationships with The Echo Nest.

as Gracenote offer similar services.[42] Aside from finding music, both types of services use listener data to refine the development of their social networking and advertising functions. The acquisition of The Echo Nest by Spotify in March 2014 illustrates the increasing importance of this aspect of the market.

63. To sum up, a number of significant digital music services started as either on-demand music services that allowed subscribers to play and create playlists or as a radio-style player that uses algorithms to create a "station" based on user preferences. By 2014, the major services all contained some aspect of both webcasting (describe as "radio") and on-demand, demonstrating substantial convergence between "interactive" and "non-interactive" services.

64. *Ubiquity*. Both "interactive" and "non-interactive" services have made efforts to be ubiquitous. For example, Pandora's investor presentations and marketing materials set forth its "Pandora Everywhere" strategy – to be available in the car, on the living room TV and/or sound system, and on mobile devices, tablets, and computers.[43] Ubiquity is particularly valuable to listeners who have provided substantial feedback to Pandora, resulting in "stations" that are highly customized to those listeners' tastes.

65. Services are often available in different operating systems or formats. For example, the free version of Spotify installs an application on the user's computer. There are also mobile versions and a version available through Internet web browsers. Like Pandora, Spotify works with a set of consumer electronics "hardware partners" that include Sony, Pioneer, and Yamaha, and is available in the car, on the living room TV and/or sound system, and on various devices.[44] The increasing presence of these applications on mobile and automotive platforms has increased the pressure on interactive services to provide satisfactory "lean-back" experiences.

66. *Pricing.* Consumer pricing for both non-interactive and interactive services has become more similar over time. In his 2009 study, Dr. Pelcovits found that the ratio of the average monthly subscription fees for "interactive" services to "non-interactive" services was more than 3.25.[45] In the intervening period, the predominant market monthly price of subscription "interactive" services has fallen to $9.99 (or less). Currently, the ratio of interactive to non-interactive subscription fees ranges from 1.87 to about 2.04; see Exhibit 5.

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[42] *Gracenote's Echo Nest Replacement 'Rhythm' To Power ROK Music Streaming*, Hypebot, http://www hypebot.com/hypebot/2014/06/gracenotes-echo-nest-replacement-rhythm-to-power-rok-music-streaming html (accessed June 26, 2014).

[43] *See, e.g., Listen to Pandora in your home*, Pandora, http://www.pandora.com/everywhere/home (accessed Sept. 30, 2014).

[44] See Spotify Help website under, for example, "Using Spotify Connect with your Pioneer device." *Spotify Help*, Spotify, https://support.spotify.com/us/problems/?_ga=1.5046259.1136767350.1401826889#!/article/Spotify-Connect-Partner-Devices (accessed Sept. 30, 2014).

[45] Dr. Pelcovits performed two computations, using $4.13 as the average price of non-interactive services, and either $13.70 or $13.40 as the price of interactive services. See Web III Remand, pp. 56-57.

67. Exhibit 5 also shows that the ratio of prices for interactive services to the prices of non-interactive services has narrowed substantially in this period. A number of "interactive" services are priced at parity with Pandora's $5 per month ad-free paid service. For example, Rhapsody recently announced its $5 per month ad-free "unRadio" service, which offers curated playlists as well as on-demand listening and caching of the selected songs.[46] Spotify recently introduced a $5 per month price point for college students.[47] In each case, industry observers have commented that these $5 price points are intended to compete directly with Pandora's $5 per month fee for its paid service.[48] Similarly, Spotify recently introduced a free mobile service which shuffles songs within playlists rather than allowing full on-demand functionality.[49] Industry observers commented that this service was positioned to compete directly with Pandora.[50]

68. Moreover, as shown in Exhibit 6, it appears that most consumers do not place a substantial premium (if any) on interactivity as compared to Pandora's features relating to curation and customization. Using the Edison/Triton study, one can infer that among customers utilizing free services, Pandora's mixture of apparently statutorily compliant customization/automation is preferred by consumers in the marketplace over Spotify's full interactivity by a factor of about 6.6 to 1.

69. *Free vs. paid subscription services.* Both customized and interactive services offer paid and free subscription alternatives. Many services that offer paid advertising-free subscriptions also offer free ad-supported services.

70. As shown in Exhibits 7a and 7b, about 96% of Pandora listeners and 75% of Spotify listeners have chosen their ad-supported versions over the paid but ad-free subscription versions. As a case in point, even though it was the first subscription-based digital music service, Rhapsody did not offer free ad-supported services. Not surprisingly, Rhapsody has seen less growth than Pandora or Spotify. Recently, Rhapsody announced that it will introduce a lower-priced "unRadio" in 2014, and allow a free trial.[51]

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[46] *UnRadio: Rhapsody Unwraps New Pandora Meets Spotify + Shazam Service*, Hypebot, http://hypebot.com/hypebot/2014/06/unradio-rhapsody-unwraps-new-pandora-meets-spotify-shazam-service-.html (accessed June 25, 2014).

[47] *Graduate to Spotify Premium for $4.99*, Spotify, https://www.spotify.com/us/student/ (accessed Sept. 30, 2014).

[48] Brad Hill, *Spotify student discount: response to Pandora rate hike?*, Rain News (Mar. 25, 2014), http://rainnews.com/spotify-student-discount-response-to-pandora-rate-hike/ and Brad Hill, *Rhapsody unRadio: Shrewdly targeting Pandora and Spotify*, Rain News (June 19, 2014), http://rainnews.com/rhapsody-unradio-shrewdly-targeting-pandora-and-spotify/ (both accessed Sept. 29, 2014).

[49] Ellis Hamburger, *Spotify announces free streaming on Android and iPhone, but only in Shuffle mode*, The Verge (Dec. 11, 2013), http://www.theverge.com/2013/12/11/5199692/spotify-announces-free-streaming-on-android-and-iphone-but-only-in (accessed Sept. 30, 2014).

[50] Josh Constine, *Spotify Drops Free Web Listening Time Limit Everywhere – A Big Scalability Milestone*, Tech Crunch (Jan. 15, 2014), http://techcrunch.com/2014/01/15/spotify-limits/ (accessed Sept. 29, 2014).

[51] *Introducing Rhapsody unRadio*, Rhapsody (June 18, 2014), http://news rhapsody.com/2014/06/18/introducing-rhapsody-unradio/ (accessed Sept. 24, 2014); Alex Tretbar, *After 13 Long Years, Rhapsody Adds Its 2 Millionth*

71. Leading services have also been making their free versions more attractive. For example, in late 2013 Spotify expanded its free mobile version, giving it additional functionality; specifically a listener can select an album or playlist to play on shuffle, but cannot select a specific song (previously users could only stream radio on free mobile).[52] Moreover, Pandora removed the listening cap of 40 hours/week on its free version in 2013.[53]

72. During this entire period, iHeartRadio has remained an ad-supported only product, iHeartRadio currently does not offer a premium subscription option, and yet, as was shown in Exhibit 6, continues to have success in the marketplace.

73. Exhibit 7c shows that free services account for 78% of all music streaming listeners. Consistent with this, a recent survey by Edison/Triton determined that about 75-80% of consumers find advertising to be a "fair price" to pay for free audio content;[54] see Exhibit 8. The Edison/Triton study also found that a majority of consumers believe online audio quality exceeds AM-FM radio and online ads tend to be less frequent and intrusive (but also less relevant). (See Exhibits 9 and 10.)

74. To sum up, the so-called "interactive" services that are not subject to this CRB proceeding offer features that are reasonably similar to the features offered by non-interactive services and whose value to many customers has been diminishing over time relative to the features offered by the "non-interactive" services. In Section V.B.3, I will offer a specific interactivity adjustment that will support an appropriate benchmark in this proceeding.

## B. Effects of the Statutory Rates on the Music Streaming Industry

### *1 -- The prior Webcaster proceedings*

75. The first three Webcaster proceedings (and negotiations flowing from those proceedings) determined a set of per-performance statutory rates that have generally increased over time. For example, under Web II, per-performance rates increased from $.0008 per performance in 2006 to $.0019 per performance in 2010.[55]

76. Rates set in the most recent Web III proceeding were based on the Judges' determination of what would have been negotiated between willing buyers and sellers in the absence of a

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*Paid Subscriber*, Digital Trends (July 29, 2014), http://www.digitaltrends.com/music/rhapsody-adds-its-2-millionth-paid-subscriber/ (accessed Sept. 30, 2014).

[52] Ellis Hamburger, *Spotify announces free streaming on Android and iPhone, but only in Shuffle mode*, The Verge (Dec. 11, 2013), http://www.theverge.com/2013/12/11/5199692/spotify-announces-free-streaming-on-android-and-iphone-but-only-in (accessed Sept. 30, 2014).

[53] *Pandora Removes 40-Hour-Per-Month Limit On Free Mobile Listening*, Pandora (Aug. 22, 2013), http://investor.pandora.com/phoenix.zhtml?c=227956&p=irol-newsArticle&ID=1849420 (accessed Sep. 30, 2014).

[54] "The Infinite Dial 2014," from Edison Research and Triton Digital, p. 12.

[55] Library of Congress. Copyright Royalty Board, 37 CFR Part 380, Digital Performance Right in Sound Recordings and Ephemeral Recordings; Final Rule, Federal Register / Vol. 72, No. 83 / Tuesday May 1, 2007 / Rules and Regulations, p. 24096.

statutory license. The per-performance rates were set at $0.0019 in 2011 and are increasing to $.0023 in 2015.[56]

77. Also relevant to the current proceeding is the opinion of the CRB in the Web III Remand. Here, the CRB relied primarily on what were at the time recent settlements between Sirius and Sound Exchange and the NAB and SoundExchange. In the remand, the CRB stated that these non-interactive rates were preferable to an interactive benchmark, which however, was still within the "zone of reasonableness."[57] However, in the SDARS II satellite proceeding, the CRB chose not to adopt an interactive benchmark in part because the interactive rights differed from the statutory rights at issue in that case.[58]

***2 -- The "pureplay" rates***

78. For purposes of the Webcaster IV proceedings, it is important to note that Congress made it clear that pureplay rates were the result of "unique" circumstances and therefore not precedential.[59] Congress also made it clear that the Webcaster Settlement Act rates were not to be interpreted as "market based."[60]

79. I place relatively little weight on the pureplay rates flowing from the Webcaster settlement given that as a term of those agreements and by statute, they cannot be used as benchmarks in this proceeding. In sum, the pureplay rates are not examples of voluntary arm's-length agreements between willing parties, and thus are not appropriate benchmarks in this matter.

***3 -- The pureplay rates and the statutory rates have cast a shadow over the market.***

80. For webcasting services eligible for the pureplay settlement, paying the pureplay rate is a viable alternative through the year 2015. Likewise, for services eligible for the existing statutory rate, paying the statutory rate is a viable alternative through the year 2015. In the end, therefore, the difference between directly negotiated rates and statutory rates during the period that runs through 2015 is likely to reflect the incremental revenues (and profits) direct licensees may expect from additional functionality not covered by the statutory license, as compared to functionality covered by either the pureplay rate or the statutory rate.

81. To account for the shadow effect of a statutory license, the CRB has emphasized that the "hypothetical marketplace" of willing buyers and willing sellers is "one in which no

[56] Web III Remand, p. 1.

[57] Web III Remand, p. 50.

[58] Library of Congress, Copyright Royalty Board, 37 CFR Part 382, "Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services; Final Rule," Federal Register, Vol. 78, No. 74, Wednesday, April 17, 2013, Rules and Regulations (hereinafter, "SDARS II Final Rule"), at 23058.

[59] 2009 *Webcaster Settlement* at 34796.

[60] See, for example, Testimony of Jeffrey A. Eisenach, Ph.D. before the Subcommittee on Intellectual Property, Competition and the Internet, Committee of the Judiciary, U.S. House of Representatives, November 28, 2012 (hereinafter, "Eisenach (2012), Attachment A, p. 18.

statutory license exists."[61] As the Copyright Office correctly has noted, "[it] is difficult to understand how a license negotiated under the constraints of a compulsory license, where the licensor has no choice but to license, could truly reflect 'fair market value.'''[62]

82. There is a substantial law and economics literature explaining the nature of the process by which bargains are reached "in the shadow of the law."[63] The analysis of rates for services in the shadow of the statutory and pureplay rates is also related to and informed by the literature on the economics of "reasonable royalties" in patent infringement cases. Briefly, a reasonable royalty is the amount that would be agreeable to a willing licensee and willing licensor, assuming that both parties agreed that the patent in question was known to be valid, enforceable, and infringed.[64] In contrast, validity, enforceability, and infringement are often uncertain in actual patent license negotiations. Thus, "reasonable royalties" often exceed – in some cases by a factor of two or more – the "market" royalty rates negotiated by other parties prior to litigation. It would not be unusual, therefore, for a reasonable royalty to lead a willful infringer to lose money, especially during a period in which it was making significant expenditures to support its growth.[65] More generally, not all licensees need be profitable. A licensee with an unreasonable cost structure would not be guaranteed any profit with any royalty, whether negotiated between willing parties or imposed by a court on an infringer as a reasonable royalty.[66]

83. Economic analyses of patent royalties often involve an attempt to use actual negotiated rates as benchmarks, while accounting for differences in the factors that differentiate the actual negotiated patents from those for which the court wishes to determine a reasonable

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[61] Web III Remand, p. 31. *See also* Webcaster II: 37 CFR Part 380, Digital Performance Right in Sound Recordings and Ephemeral Recordings, at 2487 (May 1, 2007) (same); Webcaster I; 37 CFR Part 261 [Docket No. 2000–9 CARP DTRA 1&2] Determination of Reasonable Rates and Terms for the Digital Performance of Sound Recordings and Ephemeral Recordings, at 45244 (July 2002) (noting that CARP "determined, and the parties agreed, that the rates should be those that a willing buyer and willing seller would have agreed upon in a hypothetical marketplace that was not constrained by a compulsory license").

[62] Noncommercial Educational Broadcasting Compulsory License (Final rule and order), 63 FR 49823, 49835 (September 18, 1998).

[63] The classic article is Robert H. Mnookin and Lewis Kornhauser, "Bargaining in the Shadow of the Law," *Yale Law Journal*, Vol. 88, No. 5, April 1979, pp. 950-997. A similar bargaining perspective applies to negotiations over patent royalties, where the negotiated royalties are determined (among other things) by the parties vies as to the probability that the patent is valid, practiced, and infringed in the context of the legal environment which determines the enforceability of the patent. For a relatively recent example, see Suzanne Michel, "Bargaining for Rand Royalties in the Shadow of Patent Remedies Law," *Antitrust Law Journal*, Vol. 77, 2011, pp. 889-911.

[64] *Panduit Corp. v. Stahlin Bros. Fibre Works, Inc.*, 575 F.2d 1152, 1158 (6th Cir. 1978).

[65] Pandora has recently indicated that it has reached an "inflection point" in its profitability, having made a policy choice in the past to sacrifice profits in return for growth. See, e.g., *Pandora Reports Record 2Q14 Financial Results*, Pandora (Aug. 22, 2013), http://investor.pandora.com/phoenix.zhtml?c=227956&p=irol-newsArticle_pf&ID=1849376 (accessed Sept. 27, 2014).

[66] I understand that in prior Web proceedings, the Judges determined that the CRB was not obligated to set rates that guaranteed webcaster profitability. See Web III Remand, p. 22: "The Act instructs the Judges to use the willing buyer/willing seller construct, assuming no statutory license. The Judges are not to identify the buyers' reasonable other (non- royalty) costs and decide upon a level of return (normal profit) sufficient to attract capital to the buyers."

royalty. As a result, reasonable royalties can be characterized in many cases as having been determined "in the shadow of" actual negotiated rates.[67] Similarly, actual rates are also negotiated in the shadow of potential litigation.[68]

84. Despite the fact that Congress made it clear that the WSA rates were not to be interpreted as "market based,"[69] as I discuss more fully in Sections V and VI, the "pureplay" rates have directly influenced the rates services have negotiated with record companies. To be specific: [redacted] I understand that Sony and Universal did not reach agreement with iHeartMedia, which pays them the CRB rates. [redacted][70]

85. In sum, the CRB and the pureplay rates have cast a shadow over the entire market. As a result, the willingness of services to pay in directly negotiated deals with record companies is determined by the incremental functionality the services can offer in a negotiated arrangement as opposed to the alternative of paying the CRB rate or the pureplay rate, or simply emulating YouTube.

86. The competitive implications of the statutory license are manifested in a variety of other ways as well. For example, as discussed more fully below, the DMCA "safe harbor" provision has also cast a shadow over negotiated rates.

87. Congress made it clear that the "pureplay" rates were not to be interpreted as "market based" or the result of negotiations between a "willing buyer and seller," but instead were a "compromise" that reflected "unique business, economic and political circumstances" of the various parties.[71] Further, the CRB found that the statutory rates in place through 2015 did appropriately reflect what would be negotiated by willing buyers and sellers.[72]

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[67] Alternatively, one can determine a reasonable royalty by evaluating the extent of the improvements in a patent over any relevant prior art. For a discussion of this approach as it relates to the Georgia Pacific factors, see Daralyn J. Durie and Mark J. Lemley, "A Structured Approach to Calculating Reasonable Royalties," *Lewis and Clark Law Review*, Vol. 14, 2010, pp. 627-651.

[68] See, e.g., Carl Shapiro, *Injunctions, Hold-Up, and Patent Royalties*, Bepress (Aug. 2006), http://works.bepress.com/carl_shapiro/10/ (accessed Sept. 26, 2014).

[69] 2009 Webcaster Settlement at 34796.

[70] [redacted]

[71] Section 114(f)(5)(C) of the WSA states that "It is the intent of Congress that any royalty rates, rate structure, definitions, terms, conditions, or notice and recordkeeping requirements, included in such agreements shall be considered as a compromise motivated by the unique business, economic and political circumstances of webcasters, copyright owners, and performers rather than as matters that would have been negotiated in the marketplace between a willing buyer and a willing seller..." See 2009 Webcaster Settlement at 34796.

[72] See Web III Remand, pp. 31, 67. The Judges found the statutory rates to lie within the "zone of reasonableness" defined in part by the assumption of willing buyers and sellers.

***4 -- The rates paid by all services are effectively determined by the CRB and any costs of differentiation.***

88. Statutory services presently incur costs for content, as determined by the statutory license, as well as costs of providing features that differentiate themselves from their competitors. As a result, the prices paid (either directly through premium subscriptions or indirectly through ad-supported services) will reflect the costs of content and differentiation.

89. Statutory services differentiate themselves in a variety of ways. For example, services such as Pandora have developed proprietary algorithms to customize the user's listening experience. However, it is reasonable to expect that commercially available recommendation algorithms such as those offered by Gracenote and the Echo Nest will continue to evolve, so that the costs of differentiation are likely to diminish.

90. I note also that if the statutory rate is too high – i.e., exceeds the "market rates" that would be voluntarily negotiated between willing parties in the absence of the statutory license – then licensees and licensors have a joint incentive to renegotiate. One would expect that the negotiation would arrive at the lower market rates. But, if the statutory rate is set below the market rate, then licensees will have unilateral incentives to elect that low statutory rate. Because we do not see widespread renegotiation of the statutory rate, one can infer (other things being the same) that the rate is not too high; rather it is an appropriate market rate or it is too low.

91. Any service – including currently "on-demand" services – has the option of electing the statutory license (albeit by possibly reconfiguring service offerings) and emulating services such as Pandora by streaming playlists customized to individual listeners' tastes. Given the shadow of the statutory license, it follows that statutory rates affect directly negotiated agreements for services which plan to offer more or different functionality than that which is provided by the statutory license. The extent to which the existing statutory rates directly affect the rates of directly-negotiated services falls on a spectrum, depending upon the degree and extent of differences in service functionality at issue, i.e., the less difference in functionality between the directly negotiated service and statutory service, the more affected the negotiated rates will be by the statutory license (and/or the pureplay settlement rates).[73] I note in this regard that interactive rates also have been affected to a certain degree by the statutory and pureplay settlement rates, particularly given that such services compete with non-interactive services subject to such rates that offer increasingly similar services to the interactive services.

[73] The CRB itself has "question[ed] whether any agreements regarding sound recording rights could be purely market-based given the current statutory framework." SDARS II, Copyright Royalty Board, 37 CFR Part 382, Determination of Rates and Terms for Preexisting Subscription Services, and Satellite Digital Audio Radio Services; Final Rule (April 2013). The influence of the statutory rates, however, depends upon the similarity between the services at issue and the licensed services. As one set of commentators noted upon conducting an empirical study into the shadow effect of the CRB statutory rates, "while the voluntary licensing path for interactive services differs from the statutory-licensing path in terms of timing, scope, and administrative tools, copyright law still profoundly influences the experience of rights holders and technology firms on this voluntary path. But the border of law's shadow *is not sharp*." Peter DiCola and David Touve, "Licensing in the Shadow of Copyright," 17 *Stan. Tech. L. Rev*. 397, 453-54 (2014) (emphasis added).

92. Seen from this perspective, the directly licensed service's total willingness to pay will be (approximately) equal to the price of the statutory license, plus the value in the marketplace of the contracted-for incremental functionality.[74]

## C. The Economics of a "Greater Of" Compensation Formula

***1 -- The market has "revealed a preference" for a "greater of" compensation formula.***

93. A typical agreement between a recording company and a directly licensed music streaming service computes compensation as the maximum ("greater of") of two or more "branches," including a per-play rate, a percentage of revenue, and, in many cases, per-subscriber payments and/or other formulaic adjustments (including guaranteed minimum total payments).

94. It is not surprising that most directly negotiated agreements between music streaming services and record companies incorporate a "greater of" rate structure in some form. Such structures are likely to be economically efficient; they provide for reasonable payments by services with a variety of business strategies and they are generally preferred by both licensees and licensors, compared to a compensation defined purely by a per-play rate.

95. From the licensees' perspectives, adding an appropriate percentage of revenue allows the per-play rate to be reduced while maintaining the same expected compensation to rights holders. This reduces the costs and risks of entry by new services, especially when listeners are to some extent "locked into" incumbent services.

96. The "greater of" structure can also ensure that the essential musical input provided by licensors – the recording companies – is compensated reasonably, irrespective of the commercial success of the licensed service. A per-play branch provides a guaranteed minimum payment per stream, compensating the rights holder for usage of music even if the service earns low revenues or otherwise fails to monetize the use of music effectively. A second branch defined as a percentage of revenue ensures that rights holders will share in the potentially substantial returns that may be generated by services that offer incremental value to listeners.

97. Although the use of a "greater of" formula would mark a deviation from the outcome of past webcasting proceedings, it is a change that is well grounded in the real world of the directly negotiated agreements between recording companies and music streaming services.[75] A "greater of" formula will mirror the format that many willing parties in this proceeding have chosen in their individual negotiations. In essence, there has been a "revealed preference" for a "greater of" formulation. A number of contracts also include a per-subscriber or per-user minimum fee and/or an overall minimum compensation

[74] Given the complexities of the bargaining process and more fundamentally the process by which new entrants contract with the owners of sound recording copyrights, I would not expect a fully efficient outcome. See, for example, DiCola and Touve, pp. 452-459.

[75] I understand that none of the parties proposed a "greater of" structure in Web III.

guarantee. Because the proposed two-tier "greater of" proposal does not include either of these provisions, which are not generally applicable to statutory services (which can be free and ad-supported), it is inherently conservative.

***2 -- A greater-of structure offsets the limitation of recording company rights by the compulsory statutory license.***

98. It is important to note that with respect to all statutory webcasting services, sound recording companies lack an important right that a seller would have in an ideal "competitive market" – the right to withhold the product or service if the terms were not deemed sufficient. In bargaining theory terms, the "no license" threat point is not available. It is replaced by the statutory license.[76] Moreover, the statutory license is a blanket license which covers all sound recordings. In contrast, rights holders can elect to withhold sound recordings from directly licensed services. For example, artists can withhold materials on certain directly-licensed services for a certain period of time, to take advantage of downloads or sales under a "windowing" approach (as Coldplay recently did with its latest album on Spotify[77]). But due to the compulsory blanket license, services such as Pandora are free to play such music at the time of its general release date.

99. As shown in Exhibit 11, about 725 webcasters paid royalties to SoundExchange in 2005. By 2013, more than 2500 webcasters were making payments. In light of the expected continued growth of streaming and reduction in sales of downloads and CDs, I expect that more services will operate under the statutory license during the 2016-2020 period. Those in operation today have distinct business models and strategies. Some rely mostly on subscription revenues, while others rely primarily on advertising revenues. Some offer sophisticated web-based systems which allow users to develop play stations that suit their personal preferences, while others offer pre-programmed stations that are less flexible. Some offer a broad array of choices while others emphasize particular genres of music. And, most importantly, some utilize business models that seek to generate substantial current revenues, while others may follow growth-oriented business models that forgo

[76] For perspective, see "Copyright Law Revision," Studies Prepared for the Subcommittee on Patents, Trademarks, and Copyrights of the Committee on the Judiciary, United States Senate, 86th Congress, First Session, Study 5, "The Compulsory License Provisions of the U.S. Copyright Law," p. 49 ("the statutory rate operates as a ceiling for any negotiated royalty rate").

[77] Stuart Dredge, *Spotify tells fans why it doesn't have Coldplay's Ghost Stories to stream*, The Guardian (May 20, 2014), http://www.theguardian.com/technology/2014/may/19/spotify-coldplay-ghost-stories-black-keys-turn-blue (accessed Oct. 2, 2014). See also, e.g., Andy Fixmer, *Spotify Said Developing Pandora-Like Online Radio Service*, Bloomberg (Apr. 26, 2012), http://www.bloomberg.com/news/print/2012-04-26/spotify-said-developing-pandora-like-online-radio-service html (accessed Sept. 23, 2014): "In addition to drawing more potential listeners, a Pandora-like radio service would give Spotify users access to artists who are now withholding their music. Spotify has content deals with … Sony Music … Universal Music, EMI Group and Warner Music Group. Under those agreements, artists, record companies and publishers receive a cut of ad sales and subscriber fees. Spotify lacks the rights to play some artists, such as The Beatles. Others, including The Black Keys and Adele, have withheld new releases citing threats to music sales over services such as … iTunes. … While Pandora users can't choose specific songs, they have access to any artist whose music has been published, because the service operates under federal rules. Royalties paid by Pandora and other online radio companies are set by the Copyright Royalty Board, a division of the Library of Congress."

current revenues in the hope of growing market share while generating substantial network effects.

100. Individual services will face uncertainty in the future, which will be reflected in annual variation in the number of users, the number of plays, and the revenues generated. Similarly, the record labels, the artists, the music publishers, and the recording companies all will face the likelihood that future demand for their services may be highly variable and therefore risky. Of course, there can be both upside risk (a better-than-expected outcome) and downside risk (a poorer-than-expected outcome). But the asymmetry is important; the risk is greater for the recording companies than the services, because the services have the option of adopting the statutory rates, while the recording companies do not have the option of refusing to license.

101. To reflect the behavior of willing buyers and sellers, an appropriate benchmark formula should be designed to offer a reasonable sharing of the benefits of licensing among interested parties. That sharing should reward services for their innovative efforts, while rewarding the recording companies for their efforts in developing and promoting artists. It should also appropriately balance the relative contribution of the various parties.

102. A "greater of" formula offers a balance of risks that accounts for the inherent asymmetry created by the compulsory license. It ensures that involuntary licensors – the recording companies – receive at least a minimum payment per play in return for producing the music which generates the financial rewards flowing from the music streaming industry. It also allows rights owners to be compensated for a reasonable share of the revenues that are generated by successful services.

103. A benchmark formula that is limited to a fixed per-play rate is not an ideal formula in this respect. Unlike the arrangements one expects to see between willing buyers and sellers, a benchmark based solely on a per-play rate would not account for the increased revenues generated by successful services. Most of the upside benefits would go to the services, with the rights holders missing some of the benefits of the upside and, by comparison to "market rates," losing out as a result.

104. To protect against downside risk, an appropriate rate structure should include a per-play floor that, if in operation by itself alone, would provide a reasonable return to the copyright owner. This is especially the case here because the sound recording companies are required to license their music. In that sense transactions are involuntary and limit the ability of the copyright owners to protect their interests by contracting for a rate structure that reflects individual licensees' business models. Whereas in an unconstrained intellectual property ("IP") licensing situation, the copyright owner can refuse to license its IP, here any potential licensee can always elect the compulsory license at the statutory rate. A robust per-play rate prong reflects the ordinary practice in most direct agreements and compensates the copyright owner to some extent for the loss of the monopoly right to limit or to exclude others from the use of its IP.

105. Why a "greater of" rather than a "lesser of" multiple tier formula? A "lesser of" formula would only exaggerate the asymmetry between services and recording companies. A

"greater of" formula is necessary if royalties are to reasonably account for the variety of business strategies available to the services. Some may choose to sacrifice current revenues in return for increased market share, ultimately monetizing their service after "locking in" a substantial set of consumers. After lock-in is complete, one potentially profitable strategy is to utilize an effective advertising model so as to monetize the value of the blanket license without a large number of plays.[78] If there were a lesser-of formula, then only a per-play rate would apply. If so, then – unlike the directly licensed services – when such a service's upside does materialize, it would not be shared with the recording companies and the artists.

***3 -- Implications of the questions posed by the Web IV Commencement Order***

106. The Commencement Order for Web IV sets forth questions that a proposed rate structure should address.[79] In this subsection, I explain why a multi-tier "greater of" formula is responsive to the Judges' questions.

Question 1: "*What is the importance, if any, of the presence of economic variations among buyers and sellers?*"

107. I agree with the Judges' assessment that buyers and sellers vary "in terms of sophistication, economic resources, business exigencies, and myriad other factors."[80] I also concur with the view that, "To impose a rate that is economically appropriate for one such willing buyer upon any or all other willing buyers might not necessarily satisfy the statutory requirement of replicating the marketplace, but rather might be inconsistent with the rate structure of an actual market for sound recordings."[81]

108. The "greater of" formula that I propose is designed to generate appropriate economic incentives for commercial services and the recording companies. This rate structure will provide appropriate economic incentives, even if the market is volatile in the years to come. Separately, to account for non-commercial music streaming services, I also propose a minimum fee subject to a maximum number of aggregate tuning hours.

Question 2: "*Should royalty rates embody any form of economic 'price discrimination' in order to reflect the statutory hypothetical marketplace?*"

109. The Judges have referenced the observation in Web II that in actual markets, segmentation often occurs according to elasticities of demand, with the lower elasticity segments

[78] While not a party to this proceeding (except for its simulcasts), terrestrial radio broadcasters have relatively few plays per hour, but is highly effective in monetizing in advertisements.

[79] Library of Congress, Copyright Royalty Board, [14–CRB–0001–WR (2016–2020)], Determination of Royalty Rates for Digital Performance in Sound Recordings and Ephemeral Recordings (Web IV), Federal Register / Vol. 79, No. 2 / Friday, January 3, 2014 / Notices (hereinafter, "Web IV Commencement Order"), pp. 413-414.

[80] Web IV Commencement Order, p. 413, quoting Judges in Web II.

[81] Web IV Commencement Order, p. 413.

typically paying higher prices.[82] In the language of economics, offering different prices to customers with different demand elasticities is a form of price discrimination. Economic theory makes it clear that price discrimination that is profitable for the price-setting firms may also be economically efficient to the extent that it allows those services to reach the widest set of consumers possible.[83]

110. In a market with heterogeneous digital music listeners, elasticities of demand may vary substantially not only among individuals, but also across the range of services preferred by those individuals. Thus, services' elasticities of demand reflect the preferences of their listeners.[84] Furthermore, differences in price elasticities will also reflect differences in the technical features of the services as well as their business models. If one assumes that the market is at or near equilibrium, these differences will also be reflected in market prices. As a result, variations in services' demand elasticities are captured in part in my analysis by interactivity adjustments (discussed more fully below in Sections IV and V). These adjustments can account for variations in the extent to which "interactive" services are substitutable with "non-interactive" services using the statutory license.

111. The Judges have also expressed the question of whether a per-performance rate that was appropriate for one type of business might overstate the value to another. I see this question as supporting a statutory rate proposal that "discriminates" in offering different effective prices for different services, reflecting the business models offered by those services, much in the same way as actual agreements between recording labels and directly licensed services.

112. Adding a second branch based on revenue allows the per-play rate to be reduced while holding constant the overall expected payments to rights holders. The "greater of" formula that I have proposed therefore creates a form of potentially beneficial price discrimination: all else being equal, services facing relatively low price elasticities will charge higher prices and generate greater revenues. These services are likely to pay on the percentage of revenue branch. Conversely, those services facing relatively high price elasticities will, other things equal, charge lower prices and generate lower revenues. They are also likely to pay royalties on a per-play basis.

> Question 3: "*What are the potential disadvantages of establishing a statutory royalty rate not based on a per performance royalty rate?*"
>
> Question 3a: *"Is it prohibitively difficult to identify webcaster revenues for the purpose of calculating a percentage-of-revenue based royalty rate?*"

113. In the Commencement Order for this proceeding, the CRB explained as follows. "In Web II, the Judges described the following three areas in which potential problems existed in the

[82] Web IV Commencement Order, p. 413.

[83] See, for example, Robert S. Pindyck and Daniel L. Rubinfeld, *Microeconomics*, 8th Edition (2013), Chapter 11.

[84] Note that the elasticity in question is the demand for the blanket statutory license, rather than the elasticity of demand for a given subset of titles (e.g., an individual label's offerings).

percentage-of-revenue rate proposals presented by the participants in that proceeding: (1) revenue measurement; (2) revenue definition; and (3) auditing and enforcement. The present Judges remain concerned with whether those potential problems would affect any potential use of a percentage- of-revenue based royalty rate."[85]

114. I expect that revenues attributable to the use of music can be identified with sufficient clarity for a wide-range of services so as to make the use of a percentage-of-revenue based royalty rate feasible. With respect to a webcaster that engages solely in statutory webcasting, the revenues attributable to the use of music would equal the gross revenues earned by the webcaster. Reasonable allocations of revenue will have to be made for webcasters that derive revenue from sources other than statutory webcasting. At a minimum, any revenue definition must be broad enough to capture all value attributable to the use of the sound recordings.

115. For example, the revenues generated by [redacted]

> Question 3b: *"Is there an ''intrinsic'' value to a performance of a sound recording that is omitted if a percentage of revenue royalty rate were to be adopted?*"

116. In the Commencement Order, the Judges invited the Participants "to [discuss] their understanding of the ''intrinsic'' value, if any, of a performance of a sound recording, and how it might not be embodied in a royalty rate calculated as a percentage of webcaster revenue."[86] The intrinsic value of a sound recording performance is reflected in part by direct agreements between record companies and music streaming services that feature a minimum per-play fee as one payment branch (among several, generally in a "greater of" formula). Moreover, the statutory rate structure will apply to any service which elects it, irrespective of the recording labels' view of its business model or its likely degree of success. Finally, the inclusion of a statutory per-play rate will account for the value of a sound recording performance in a way that is not accounted for by a percentage-of-revenue formula. Consider, for example, a service that chooses to forego most or all revenues in order to build market share. A minimum per-play fee will ensure that the price for the use of sound performances does not fall below a reasonable measure of the lower bound of such intrinsic value.

> Question 3c: "*Would a royalty rate calculated as a percentage of webcasters' revenue be ''disproportionate'' to webcasters' use of sound recordings?*"

[85] Web IV Commencement Order, p. 414.

[86] Web IV Commencement Order, p. 414.

117. I agree that "disproportionality" is a potential problem if rates were determined solely by a percentage of revenue. It is unlikely that services with relatively large revenues will have relatively small numbers of streams. However, disproportionality could arise if some webcasters declined to attempt to maximize webcasting profits, and instead attempted to maximize market share or to use webcasting to support complementary businesses while foregoing substantial direct revenue. In other words, it is *likely* that there will be licensees with relatively low revenues and large numbers of streams. Licensors then would suffer lost income. This risk could be mitigated by setting the rate to be the greater-of a percentage of revenue and a significant minimum per-play fee. This compensation structure offers some downside protection for the sound recording companies, which as I have pointed out previously, are required to license their IP to any service that wishes to obtain a license.

## IV. Methodology for Evaluating Potential Benchmarks

118. My rate proposal for commercial webcasters is derived in three steps. First, I apply the comparability "tests" put forward by the Judges in Web III Remand to obtain qualitative evaluations of potential benchmarks.

119. As I will explain, on the basis of that analysis, I divide the services into three categories. Category A includes directly licensed "interactive" services that offer on-demand functionality. Category B includes the directly licensed webcasting services, including iHeartMedia's iHeartRadio and Nokia's MixRadio. Finally, Category C includes video music services such as YouTube and Vevo.

120. Second, for each directly licensed service/recording company pair, I first calculate an effective per-play rate and percentage of revenue (relying on data covering June 2013 – May 2014[87]). Then I apply adjustments to account for the value of interactivity (if appropriate), the number of royalty-bearing plays per month, and, the difference between deals negotiated by independent recording companies as compared to the majors. Potential benchmarks are adjusted to account for the evolution of the digital music industry and the differences between the benchmarks and the statutory license, so as to be consistent with the methodology used to establish an appropriate benchmark.

### A. Qualitative Tests for Evaluating Potential Benchmarks

121. The CRB Judges in Web III Remand endorsed an analytical framework consisting of a hypothetical negotiation between a willing buyer and willing seller for a blanket license for streaming copyrighted musical performances, without the possibility of a statutory license alternative to a negotiated license.[88]

122. This framework implies a set of four economic "tests" to evaluate potential benchmarks.

[87] These months were used because they are relatively recent and data were available for most months for the major services.

[88] Web III Remand, p. 31.

a. *Willing buyer and seller test*: the rates are intended to be those that would have been negotiated in a hypothetical marketplace between a willing buyer and a willing seller.

b. *Same parties test*: the buyers in this hypothetical marketplace are the statutory webcasting services and the sellers are record companies.

c. *Statutory license test*: the hypothetical marketplace is one in which there is no statutory license.

d. *Same rights test:* the products sold consist of a blanket license for the record companies' complete repertoire of sound recordings, to be used in compliance with the DMCA requirements.

123. When comparing potential benchmarks to the statutory license, one should consider:

a. the nature of the grant of rights and listener usage, compared to the rights that are provided by the statutory license;

b. the nature of the agreement, including its term, the extent to which it is bundled with other agreements, the streams of revenue, other values, and separately, the extent to which the rates are influenced by the statutory rates; and,

c. the nature of buyers and sellers and their roles in determining potential benchmark agreements.

124. In addition to negotiated agreements between services and recording agreements, it is reasonable to incorporate other sources of market information. For example, companies such as Amazon, Apple, Barnes and Noble, Google, and Netflix have created substantial businesses based on reselling content – including music, movies, and e-books – generated by others. These entities normally pay about 70% of revenues for their content.[89] However, my "greater-of" rate proposal includes a branch of only 55% revenue. In that sense it is inherently conservative.

## B. Analysis of Potential Benchmark Agreements

[89] Juliette Garside, *Amazon war with Hachette over ebook profit margins intensifies*, The Guardian (May 27, 2014), http://www.theguardian.com/business/2014/may/27/amazon-hachette-ebooks-profits-jk-rowling-james-patterson (accessed Sept. 30, 2014); Tim Worstall, *Apple's iTunes is, Standing Alone, One Of The Largest Media Companies*, Forbes (Dec. 4, 2012), http://www.forbes.com/sites/timworstall/2012/12/04/apples-itunes-is-standing-alone-one-of-the-largest-media-companies/ (accessed Sept. 30, 2014); Philip Elmer-DeWitt, *The Apple e-book antitrust trial: Enter Barnes & Noble*, Fortune (June 19, 2013), http://fortune.com/2013/06/19/the-apple-e-book-antitrust-trial-enter-barnes-noble/ (accessed Sept. 30, 2014); *Musicians: Get your music on Google Play*, Google, https://play.google.com/artists/ (accessed Sept. 30, 2014); and Netflix, Inc., Form 10-K for Fiscal Year Ended December 31, 2013, pp. 21, 23.

***1 -- Direct agreements often contain more than two payment branches and additional forms of compensation beyond per-play rates and percentages of revenue.***

125. My proposal reflects the general "greater of" compensation structure seen in the set of appropriate benchmarks, i.e., the direct agreements between services and recording companies. However, actual agreements typically specify more than two compensation tiers in the "greater of" formula. For example, in addition to the branches defined by minimum percentages of revenue and payments per play, many agreements specify a third compensation branch defined by per-subscriber minimum payments.

126. Many direct agreements also provide rights holders a number of other additional valuable considerations that normally do not vary with the number of plays and are not explicitly accounted for in the monthly performance reports that services provide to recording companies. These include: guaranteed and/or upfront payments (which are in some cases non-recoupable), advertising and promotional funds/slots, minimum advertising requirements for free services and other "upsell" incentives (to encourage listeners to convert from free to paid services), listener and artist data, and MFNs. In some cases record companies also receive equity stakes.

127. These features of actual agreements imply two additional issues to which the "greater of" rate proposal should be responsive. First, actual direct agreements that pay rights holders on the basis of more than two compensation branches cannot be reliably summarized by the contractually specified minimum payments using only two branches. For example, suppose an agreement between recording company and a streaming music service specifies that compensation will be the greater of a minimum per-play rate, a minimum percentage of revenue, and a minimum payment per subscriber. The contractually specified minimum per-play rate and percentage of revenue would tend to underestimate the music services actual payments to the recording company to the extent that the per-subscriber minimum is the operative payment branch. If so, then the average effective per-play rate and percentage of revenue shown in the performance statements will exceed the minimums specified in the agreement between the parties.

128. The second issue pertains to the valuation of considerations not explicitly shown in the performance statements. The dollar values of some factors (such as "upsell" incentives) are likely to be embedded in the effective average per-play payments (or percentages of revenue) shown in services' performance statements. However, values of other factors such as advertising allotments, equity stakes, or upfront fees may not be. Because I do not include such additional consideration in my analysis, it is inherently conservative.

129. An appropriate benchmark should take into account non-recoupable upfront fees and other considerations which are not expressed on a per-play or percentage of revenue basis in monthly performance statements. I believe it reasonable and conservative to allocate the dollar value of these considerations on a per-play basis over the course of the agreement,[90]

[90] Services normally issue monthly performance statements that tally a label's plays and associated compensation during that month. For considerations such as guaranteed promotional or advertising funds and/or non-recoupable guaranteed payments, it is reasonable to allocate these considerations linearly, i.e., evenly on a monthly basis

and add them to the stated minimum per-play rate. Upfront and/or fixed payments which are not recoupable against subsequent variable royalties based on plays and/or revenues are a substitute for such variable royalties. For any given dollar amount of compensation, licensors generally prefer fixed (riskless) payments over variable (risky) payments that are dependent upon future performance under an agreement. Also, a newly established directly licensed service is going to obtain some listeners and plays. However, the incremental revenue earned by the service may be uncertain, delayed, and/or hard to identify. Thus, upfront and/or fixed payments (including "in-kind" payments such as guaranteed advertising) are reasonably allocated on a per-play basis. Since these are not contingent payments, they are risk free. Hence this apportionment tends to understate the value of the guarantees on a per-play basis.

130. An agreement which specifies an upfront fee plus a royalty based on the number of streams is an example of a "two-part tariff." Patent licenses often have a similar structure (a lump sum upfront fee plus a running royalty denominated as a percentage of sales). Such compensation structures can be used to allocate risk: all else equal, licensors prefer lump sum payments that do not depend on the licensee's revenues or profitability, whereas licensees prefer that all royalties be contingent on sales. Thus, if lump sum payments could not be made, licensors would be expected to demand higher royalties on sales. Also, in some circumstances, the two-part tariff can be used as a method to price discriminate among users – separating to some extent those customers with relatively high price elasticities of demand (who might be charged a relatively high upfront fee but a low usage fee) from those whose demand elasticities are relatively low (and might be charged a relatively low upfront fee and a relatively high usage fee). Just as in patent licenses, the fees cannot be viewed in isolation but must be considered as a complete compensation schedule.[91]

131. Other factors may also affect the net value of direct agreements. They include:

    a. Market shares: Services may place more value on agreements with record companies that have more extensive and popular catalogs.

    b. International allocations: Some agreements [redacted] are world-wide.

    c. Bundled agreements: In order for independent record companies to sell downloads on iTunes, Apple apparently requires an agreement with its iTunes Radio terms.[92]

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throughout the terms of the agreements, and then for each month, evenly on a per-play basis using the monthly performance statements. To be conservative, I have not performed apportionment for guarantees that are recoupable against subsequent payments (based on per-play payments, revenue share, per subscriber fees, or other consideration).

[91] For a discussion of two-part tariffs, see Pindyck and Rubinfeld, *Microeconomics*, 8th Edition, Section 11.4.

[92] See http://www.digitalmusicnews.com/wp-content/uploads/2013/11/iTunes_Americas_-Music_v16.pdf?638cab, or Dan Servantes, *Apple Takes on Radio*, Music Business Journal (Aug. 2013), http://www.thembj.org/2013/08/apple-takes-on-radio/ (all accessed Oct. 1, 2014).

d. Promotion vs. Substitution: The terms of actual agreements will reflect the relative degree to which services promote or substitute for sales of CDs and downloads.

e. Relative contribution: Record companies and webcasting services bear differing risks, and make different contributions to revenues and profits (technical, financial, strategic).

132. Because directly licensed services have entered into voluntary agreements with recording companies, it is reasonable to assume that the values of these factors are accounted for in the terms of the parties' agreements.

***2 -- Adjusting the potential benchmark agreements***

133. It is likely that many or all of the directly licensed agreements have been negotiated in the "shadow" of the statutory license. Ideally, one should adjust such agreements to remove the effects of the shadow before using them as the basis for a benchmark. To be conservative, however, I do not make any such adjustment, although the primary set of benchmarks I propose – interactive agreements – are less affected by the shadow of the statutory license than are other potential benchmarks.

134. One should also adjust such agreements to account for the functionality these agreements provide, relative to the functionality that would be available to statutory services. These adjustments are detailed in the sections that follow.

135. Broadly, when I calculate a benchmark using directly licensed "interactive" services, I adjust for the value of interactivity. For both "interactive" and "non-interactive" benchmarks, I also account for differences between services in the number of royalty-bearing plays. For example, most directly licensed services do not pay for "skips," whereas statutory licensees do. However, prominent statutory services (e.g., Pandora and Sirius) assert that pre-1972 sound recording performances are exempt from royalties, whereas I understand that the pre-1972 sound recordings bear royalties in all direct licenses. Furthermore, subscribers to different services may differ in the intensity of their listening during a month.

136. In addition, independent labels tend to have less extensive catalogs than major labels and in some circumstances may receive less compensation for webcasting services than major labels. I make conservative assumptions regarding differences in compensation obtained by "indies" as compared to "majors," and I account for the fraction of the services' streams represented by titles from independent recording labels.

***3 -- Accounting for time: 2014 to 2016-2020 adjustment***

137. The proposed benchmark rates (Section VI) are based on the available direct label-service agreements and on performance data.[93] However, the proposed rates will not go into effect

[93] See Appendix 1f for details of the data used in the computations.

until 2016 and will remain in effect through 2020. Hence, it is reasonable to adjust rates to account for the passage of time.

138. In Web III, the Judges approved statutory rates which increase by an average of $0.00008 per year, or about 4.2 percent of the 2010 statutory rate.[94] This is a conservative adjustment to apply in this case, for at least two reasons. First, it is widely expected that streaming will continue to replace sales of CDs and downloads over time. Therefore, any supposed promotional benefits of statutory webcaster marketing are likely to diminish over time. However, the cost of substitution will increase, because the services of statutory services will substitute in the marketplace for paid, directly licensed "interactive" and other premium services. Second, as streaming gains in importance, a greater fraction of forward-looking costs will need to be recovered from streaming revenues.

139. I also note that market evidence supports this incremental increase. For example, the stated per-play rates for [redacted]. See Exhibit 12. It is therefore appropriate that the statutory rates be increased by $0.00008 per year during the rate period. These modest increases will minimize any disruptions in the marketplace that might arise if there were sharp, sudden changes in rates, while also compensating rights holders as streaming continues to displace sales.

140. This proposed increase is reasonable even though the rates for the interactive services in Category A generally have been declining from 2011 to the present (as noted, my proposed rates only relies upon the most recent year of data). A decline in rates for interactive services is expected and consistent with the increasing convergence between interactive and non-interactive services. As interactive and non-interactive services increasingly offer similar services and compete with one another for users, the retail prices charged by non-interactive services have fallen to attract more users of non-interactive services, many of which are ad-supported and "free" to consumers. Accordingly, record companies have had to depress their streaming rates to enable these directly-licensed subscription services to compete with "free." In other words, the decline in interactive rates can be attributed to the increasing competition posed by non-interactive services. Although the statutory and pureplay settlement rates may affect interactive services less than directly licensed non-interactive services, they still have a downward pull on their rates.

141. On the other side of the convergence phenomenon, the retail prices charged by some non-interactive premium (ad free) services have *increased* and become closer to the prices charged by premium interactive services. As noted, Pandora recently increased its Pandora One offering from $3.99 to $4.99 per month. In terms of the statutory rates for non-interactive services, they similarly should increase year over year to account for these services' convergence with interactive services. As the rates interactive services are

[94] Calculated as follows: ($0.0023 - $0.0019) / 5 = $0.00008. $0.00008 / $0.0019 = 4.2%. See http://www.soundexchange.com/service-provider/commercial-webcaster/commercial-webcaster-crb/ (accessed Sept. 30, 2014), and Determination of Rates and Terms, *In the Matter of Digital Performance Right in Sound Recordings and Ephemeral Recordings*, Docket No. 2005-1 CRB DTRA, United States Copyright Royalty Judges, p. 46, accessed September 30, 2014.

subject to decrease, the rates non-interactive services pay should increase. Freezing non-interactive rates or subjecting them to a rate decline because of the fall of interactive rates would effectively lock into the statutory rates the very downward effect that the current statutory and pureplay rates are having on the entire market.

## C. Selection of the Proposed Rate

142. In selecting a proposed rate from a set of potential benchmarks, I considered the following important factors.

143. *Asymmetry*: The statutory license has an asymmetric effect on the bargaining between the labels and the services: if the statutory rates are too high relative to the market, then the record companies and webcasting services have an incentive to negotiate lower rates. However, if the statutory rate is set too low, the compulsory license does not allow owners of sound performance rights to opt-out.

144. *Term length*: Most directly licensed deals specify two or three year terms that take effect upon execution. (Some can be renewed by agreement of the parties.) By contrast, the statutory license covers a five-year period which begins approximately two years after the negotiation of most potential benchmark agreements.

145. *Convergence*: As previously discussed, "interactive" and "non-interactive" webcasting services have converged to a substantial degree. Algorithms used by Pandora and other statutory services provide highly customized experiences that may come close to emulating the choices a listener would make when using an interactive service. Conversely, direct "interactive" licensees such as Spotify and Rhapsody are increasingly providing "lean back" experiences (e.g., Internet "radio stations" defined by genre and mood).[95] Directly licensed rates can be expected to reflect the incremental value of the granted functionality over-and-above what can be achieved with the statutory rights.

146. *Complementary benefits and bargaining power*: As I will now explain, some major direct licensees (e.g. Spotify) may have unusual bargaining power in negotiations with labels. Other licensees apparently derive substantial complementary benefits from operating music streaming services.

147. Spotify's publicly-reported average annual revenue of $41 per subscriber exceeds the average per capita expenditure on music in the U.S.[96] Spotify is also the preeminent

[95] See, e.g., *MusicQubed Puts the Rise of Listen Services Into Numbers*, Word Press (Mar. 31, 2014), http://musicindustryblog.wordpress.com/2014/03/31/musicqubed-puts-the-rise-of-listen-services-into-numbers/ or Randall Roberts, *Music streaming services unleash a torrent of digital playlists*, LA Times (Aug. 1, 2014), http://www.latimes.com/entertainment/music/la-et-ms-music-streaming-20140803-column.html#page=1 (both accessed Sept. 30, 2014).

[96] *How is Spotify contributing to the music business?*, Spotify, http://www.spotifyartists.com/spotify-explained/ (accessed Sept. 29, 2014).

international music service – it operates in over 100 different countries and territories.[97] Finally, the major record companies hold equity stakes in Spotify.[98] All of these factors limit the record labels' incentives to adopt tough stances in negotiations with Spotify.[99]

148. Notwithstanding falling CD and download sales, record companies still derive most of their revenues from sales. Apple accounts for approximately 40 percent of revenues from recorded music in the U.S.[100] Apple's ability to drive sales of downloads made it a uniquely valuable partner to major record companies, and an essential outlet for independents.

149. iHeartMedia is another unique licensee. It controls a large number of terrestrial radio stations, including their simulcast versions. Because they bridge programmed terrestrial radio and webcasting, simulcasters occupy a unique position in the marketplace.

150. However, out of the major recording labels, at this time only Warner has entered into a direct agreement with iHeartMedia. [redacted]

151. Google and Amazon are similar cases. Both derive substantial complementary benefits from streaming music by drawing consumers into their ecosystems. Each licensee provides unique value to licensors, as well. Like Apple, both provide important online marketplaces for the sale of music and videos. Moreover, each has substantial bargaining power vis-à-vis content providers.

152. To sum up, certain licensees – including Amazon, iHeartMedia, and Google – obtain substantial complementary benefits from their agreements with recording companies. And these licensees offer unique benefits to rights holders. None of these benefits would be expected from the statutory license/licensees. Agreements between recording companies and these entities are therefore less appropriate as benchmarks compared to the set of "Category A" interactive agreements from which I have derived my rate proposal.

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[97] *Full list of territories where Spotify is available*, Spotify, https://support.spotify.com/us/learn-more/faq/#!/article/Availability-in-overseas-territories (accessed July 1, 2014).

[98] Paul Resnikoff, *The Major Labels Are Trying to Sell Spotify for $10 Billion, Sources Say*, Digital Music News (June 11, 2014), http://www.digitalmusicnews.com/permalink/2014/06/11/major-labels-trying-sell-spotify-10-billion-sources-say (accessed Sept. 29, 2014).

[99] For example, because major labels hold equity stakes in Spotify, their incentives to demand high rates are attenuated. All else equal, higher rates diminish Spotify's profitability and therefore the value of equity.

[100] Chris Brantley, *If Streaming Music Kills Digital Downloads, Apple Must Make a Huge Decision*, The Motley Fool (Apr. 23, 2014), http://www fool.com/investing/general/2014/04/23/if-streaming-music-kills-digital-downloads-apple-m.aspx, (accessed Apr. 29, 2014).

153. *Omitted elements*: Actual agreements involve non-financial considerations that were not valued as part of the analysis and are not reflected in performance statements (including equity stakes, data provision, MFNs, international launch guarantees, and risk-reducing provisions such as minimum total compensation guarantees).

154. Because per-play rates can be reduced – while keeping overall expected compensation constant – by increasing the number of payment opportunities, it is conservative to omit these elements of compensation.

# V. Comparability Analysis of Potential Benchmarks for Commercial Webcasting

155. The analysis generates a spectrum of potential benchmarks. In this section I elaborate on these issues. I do this with the acknowledgment that there is no ideal, perfect benchmark. Rather, my submission is the result of an evaluation of a number of potential alternatives. The analysis that follows describes a set of potential benchmarks that I have considered as well as the choice that I believe to be the best among a set of reasonable alternatives.

156. In the remainder of this section, I apply the methodology set forth in Sections IV.A and IV.B to potential benchmarks. Each service is characterized according to the tests described previously. In particular, I discuss the impact of the statutory license on the terms and rates in the agreement and the degree of functionality compared to the statutory license; the extent to which each deal is an agreement between parties who are willing and similar to the parties in the statutory license; and, the ability of recording companies or other rights holders to withhold content from services.

## A. Directly Licensed "Interactive" Benchmarks

### *1 -- Economic tests applied to "interactive" agreements*

157. The agreements between recording companies and the major "interactive" services (corresponding to "Category A" as listed in Section II) are the most informative benchmarks. As the CRB noted in the Web III remand decision in its discussion of interactive agreements, "[s]ince these agreements were negotiated in a setting free from the constraints of the regulatory scheme, they provide the best evidence of the agreement of a willing buyer and a willing seller in this respect."[101]

158. These agreements earn the best scores on the economic tests for appropriate benchmarks.

    a. *Willing buyer and seller test*: These agreements are struck between willing parties. Interactive services do not have the option of electing the statutory license.

[101] Web III Remand, p. 86.

b. *Same parties test*: The parties in these agreements are similar to those in the hypothetical marketplace: the buyers are webcasting services and the sellers are record companies.

c. *Statutory license test*: Among the spectrum of potential benchmarks, the "interactive" licenses are least likely to be influenced by the statutory license.

d. *Same rights test:* The products sold do not consist of a blanket license for the record companies' complete repertoire of sound recordings. Instead, artist/labels can withhold content from directly licensed services. Moreover, directly licensed "interactive" services often allow unlimited skips and provide "cached" downloads as well as including "on demand" choice of songs – all of which exceed the functionality specified by the statutory DMCA requirements. As discussed further below, adjustments can and should be made to account for these differences when applying the set of interactive benchmarks. These adjustments should reflect the issues of convergence and substitution, as I will now discuss.

***2 -- Interactive agreements have become more appropriate benchmarks in the period since the last rate proceeding.***

159. Interactive agreements have become more appropriate benchmarks in the period since the last rate proceeding, for several reasons.

160. First, in the period since 2009, there has been substantial convergence between interactive and non-interactive services. Non-interactive but customized "lean-back" services such as Pandora can effectively replicate the listening experience that a listener would "lean-forward" to choose on Spotify. Furthermore, the growth of applications on mobile and automotive platforms has increased the pressure on interactive services to provide satisfactory "lean-back" experiences. As a result, consumers are likely to view alternative services as relatively close substitutes for each other.

161. Second, competition among and substitution between services have intensified with the continued entry of new services and with the industry transition from sales of downloads and CDs to streaming. Over time, sales are expected to continue to fall. Streaming is expected to become increasingly important, and to dominate the market. Ultimately, as streaming replaces sales, all streaming services can be expected to be in competition with, and substitute for, other services. Any supposed "promotional benefits" that statutory services provide today should not be expected to continue at the same level in the 2016-2020 rate period, given the decline in CD and download sales. Simply put, the notion of promoting sales of music is quickly becoming an anachronism. Willing sellers – the record companies – are increasingly focused on deriving direct revenue from all forms of *access* to music, as opposed to sales of CDs or downloads. Moreover, any potential for promotion today to increase subscriptions for on demand streaming services will be limited to the extent that on demand and non-interactive services converge over time.

162. Third, as discussed above and more fully below, other available market-based evidence tends to provide less suitable benchmarks. For example, directly-licensed agreements

involving non-interactive services that could have elected the statutory or pureplay rates have clearly been directly influenced by those rates, making them less suitable benchmarks. All interactive services result from directly negotiated agreements between willing parties. Some non-interactive services have negotiated agreements with record companies (e.g., iHeartMedia/Warner). However, these services had the option of electing the statutory license. They were also in competition with Pandora which pays the pureplay rates. [redacted] But interactive services do not have the option of adopting the statutory license, without eliminating the on-demand functionality of their service offerings. Their agreements are influenced less by the statutory rates, and are therefore closer to market rates. Overall, there are few directly licensed non-interactive services, and the few that do exist involve limited parties and unique circumstances that make them unrepresentative of the broader market. Moreover, most of these services – for example, the [redacted] radio service – seek to encourage listeners to convert to their companion paid interactive subscription services.[102] It is improper to isolate these types of non-interactive services from the paid services whose growth they are designed to stimulate.

163. There are three directly licensed "non-interactive"[103] or programmed and/or personalized webcasting services – Apple iTunes radio, iHeartRadio, and Nokia MixRadio. As discussed in Section II, I understand that Apple has opted not to waive certain contractual provisions in those agreements that limit or prohibit the submission or reliance upon those agreements in connection with this proceeding. Accordingly, I have not included in this report any analysis relating to those agreements.

164. The iHeartRadio and MixRadio agreements have certain attributes which make them less comparable than the interactive set of agreements. [redacted]

165. In contrast to this evidence of directly licensed "non-interactive" agreements, the directly licensed agreements relied upon in Web III, instead of the proposed interactive benchmarks, had several distinguishing characteristics. The NAB/Sirius settlements that were relied upon in Web III were negotiated and agreed upon contemporaneous with the time at which the proceeding in Web III was ongoing. Additionally, the terms of those

[102] See, e.g., [redacted]

[103] Again, I note that my use of "non-interactive" is shorthand. I do not attempt to determine whether the services are in compliance with the statute.

agreements extended into the entire Web III rate period; by contrast, [redacted] extends less than a year into the Web IV rate period, through September 2016. Furthermore, the Web III opinion notes that over 400 entities had opted into the NAB agreement on behalf of several thousand individual stations, and that approximately 100 were start-ups reporting their first webcasting after the execution of those agreements. In addition, several commercial webcasters had opted into the Sirius agreement. Thus, the rates were clearly acceptable to a large number of webcasters.[104]

166. Fourth, the general absence of evidence of directly licensed agreements between the major record companies and webcasters for non-interactive services (most non-interactive services make use of the statutory license rather than enter into direct negotiations), leads one to infer that the existing statutory rates are likely below the level which would maximize the joint profits of licensees and licensors. This also supports relying on the directly licensed interactive agreements in this proceeding. If existing statutory rates were "too high" – i.e., above the level which would maximize the joint profits of rights holders and webcasting services qualifying for the statutory license – both rights holders and services would have an incentive to voluntarily agree to lower rates. However, if rates were "too low," no such negotiation would be expected to occur, since buyers could exploit the compulsory nature of the statutory license. By contrast, there are dozens of directly licensed agreements for more than 15 interactive services that I have examined as part of the Category A set of benchmarks.

***3 -- Adjustments to "interactive" agreements***

167. Before the interactive agreements can be used as appropriate benchmarks, adjustments must be made to reflect differences between the rights in the agreements and the statutory license.

168. Because non-interactive services involve a more passive experience than services that allow for interactivity, it is appropriate to discount the per-play rates associated with the interactive services. The most directly informative revelation as to the appropriate discount comes from an evaluation of the market prices of the two services. These prices are the result of negotiations between willing buyers and willing sellers, negotiations that account for differences in functionality and for differences in revenue streams that may be affected by substitution. I have used the ratio of the market prices of the interactive and non-interactive subscription services as an appropriate interactivity discount.

169. There are two assumptions that are implicit in this approach. First, I have assumed that the ratio of the average retail subscription price to the per-subscriber royalty paid by the licensee to the record label is approximately the same in both interactive and non-interactive markets.

170. Second, my analysis does not explicitly account for "free" ad-supported services. In an ideal world, the determination of the value of interactivity would also include an

[104] Web III Remand, p. 35.

examination of the ratio of the value of free services for interactive and non-interactive offerings. While these data are not available, I note that individuals can choose between the "free" and subscription services. Assuming that the market is at or near equilibrium, there will be a group of marginal consumers who are indifferent between choosing a free or subscription service. For those consumers, the ratio of subscription prices will accurately reflect their interactivity valuations.[105] As with the prior discussion, because the demand relationships for the non-interactivity attributes of ad-supported services are otherwise similar, not explicitly accounting for the valuation of ad-supported services will not bias the calculated interactivity adjustment.

171. The interactivity adjustment that I have chosen is generally consistent with the independent "conjoint" study conducted by Professor McFadden.[106] Using a well-recognized method for measuring consumer preferences, Professor McFadden conducted a survey (and follow-up analysis) of a large group of actual and potential digital music users. The survey methodology was designed to allow one to infer listeners' values of the features of music streaming services in a setting that encourages those being surveyed to respond as if they were facing real market-like constraints. The actual adjustment that I have applied in this case – a ratio of 2.0 – is conservative when seen in light of this conjoint study, as will be described in further detail below.

172. To sum up, one can conservatively use the market prices of paid services to adjust for the differences in functionality.

***4 -- Free "Radio" Services Offered by Paid Interactive Subscription Operators***

173. A number of service operators that offer paid interactive services also offer free non-interactive "radio" services. For example, [redacted] both operate directly licensed free radio services which are explicitly designed to motivate listeners to convert to paid "on demand" service.[107] This is a source of value to record companies that the statutory license does not provide.

174. The terms of the agreements that license these radio services are of limited value as a benchmark.

    a. *Willing buyer and seller test*: These licensees had the option of electing the statutory license. This "threat point" implies that licensors cannot deny a license to the licensees. Further, the terms covering these "radio" services or tiers of service

[105] Formally, if P = F(Z, I) represents the price of subscription services, Z is a vector of non-interactivity attributes, and I = 1 if there is interactivity and 0 otherwise, then dP/dI = the value of interactivity = [F(Z, 1) - F(Z, 0)]/(1-0) = P(interactive service) – P(non-interactive service). For a theoretical review of the hedonic modeling that underlies this discussion, see Dennis Epple, "Hedonic Prices and Implicit Markets: Estimating Demand and Supply Functions for Differentiated Products," *Journal of Political Economy*, Vol. 95, No. 1 (Feb. 1987), pp. 59-80.

[106] Report of Daniel L. McFadden.

[107] See, e.g., [redacted]

typically exist to encourage paid subscriptions. Since recording labels prefer that direct licensees convert listeners to paid services, these agreements provide unique sources of value which statutory licensees are not obligated to provide. As a result, these agreements score poorly on the "willing seller" test.

b. *Same parties test*: The buyers are typically negotiating for other terms in their agreements with recording labels which provide special value to the record labels. These benefits would not be offered by statutory licensees. Therefore, these agreements score poorly on the "same parties" test.

c. *Statutory license test*: The per-play rates in these agreements tend to mirror the statutory and "pureplay" rates. Thus, they tend to score poorly on the "statutory license" test.[108]

d. *Same rights test:* Compared to the interactive services, these agreement terms grant rights that are generally closer, but not always identical to, the statutory license. For example, [redacted]

175. In sum, although elements of these deals are informative, they should be accorded relatively low weight in the set of potential benchmarks.

## B. Directly Licensed Agreements for Programmed and Customized/Personalized Webcasting Services

176. Also informative are the directly licensed webcasting service agreements between iHeartMedia (Clear Channel) and Warner, and certain record labels and Nokia for its MixRadio service (corresponding to "Category B" as listed in Section II).

***1 -- iHeartMedia / Warner Agreement for iHeartRadio***

177. [redacted]

[108] See, e.g., [redacted]

[109] [redacted]

[110] [redacted]

178. Further, [redacted]

179. [redacted]

180. Moreover, [redacted]

181. iHeartMedia does not have any agreements with the other major recording companies, and pays CRB statutory rates to stream their performances.

182. Like the interactive agreements, adjustments must be made to this "webcasting agreement" before it can be used as an appropriate benchmark, to reflect differences between the rights in this agreement and the statutory license. However, for a number of reasons, this agreement should be awarded relatively lower weight in the analysis than the above tests would otherwise indicate.

183. First, [redacted]

184. Second, [redacted]

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[redacted]

[111] See Appendix 1e.

[redacted]

185. Third, [redacted]

186. For all of these reasons, it is appropriate and conservative to place relatively little weight on the iHeartMedia/Warner agreement as a potential benchmark. An analysis of the four tests confirms this conclusion.

a. *Willing buyer and seller test*: iHeartMedia had the option of electing the statutory license, as it has done with respect to performances for the other major labels. This "threat point" implies that Warner (and the other labels) ultimately could not deny a license to it. Therefore, these agreements score relatively poorly on the "willing seller" test.

b. *Same parties test*: The buyer in this agreement is unique – both in the value provided to rights holders and the value it derives from offering a service. Statutory licensees would not normally provide such value to labels. Therefore, this agreement scores relatively poorly on the "same parties" test.

c. *Statutory license test*: [redacted]

d. *Same rights test:* Compared to the interactive services, this agreement grants rights that are closer, but still not identical to the statutory license. [redacted][113]

187. To sum up, although less comparable as a benchmark, elements of this agreement – including the structure of compensation to record companies – can be informative.

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[112] [redacted]

[113] [redacted] I understand that a statutory service must comply with the "sound recording performance complement," (17 U.S. Code §114) which prohibits within any given three hour period: (A) more than three different songs from the same *album* if more than two such songs are transmitted consecutively or (B) four different songs by the same *artist* (or four different songs from the same *compilation*) if more than three such songs are transmitted consecutively.

***2 -- Nokia MixRadio Service Agreements***

188. Record labels' agreements with Nokia for its MixRadio service are also informative market evidence.

189. Nokia has offered a free-to-consumer non-interactive radio services to purchasers of Nokia devices in the U.S. since the fall of 2012. Like other offerings in this space, the radio service can be customized by users taking into account their personal tastes. The service does not have advertisements, and appears to be near-DMCA compliant, except that it permits caching to enable users to play cached radio stations via Nokia devices while offline.[114] MixRadio also has a premium service offering for $3.99 a month that provides unlimited track-skipping, unlimited offline mixes, and high-quality audio, and which is also available on PCs.[115]

190. I have reviewed agreements between Nokia and Universal, Sony, and Warner. The agreed upon royalty rate for the free-to-consumer MixRadio service in these agreements generally [redacted] For the premium service, [redacted]

191. While unique in certain aspects, the Nokia agreements are comparable to the statutory license in several respects:

    a. *Willing buyer and seller test*: These agreements are struck between willing parties.

    b. *Same parties test*: The parties in these agreements are similar to those in the hypothetical marketplace: the buyers are webcasting services and the sellers are record companies.

    c. *Statutory license test*: Because the Nokia MixRadio is largely DMCA compliant, it is arguably influenced by the statutory license. [redacted]

[114] *MixRadio Your own personal radio station*, Microsoft, http://www.microsoft.com/en-us/mobile/apps/app/mixradio/ (accessed Sept. 15, 2014); [redacted]]

[115] *MixRadio Your own personal radio station*, Microso[redacted] http://www.microsoft.com/en-us/mobile/apps/app/mixradio/ (accessed Sept. 15, 2014); *Get Into The* Groove, Mix Radio, http://www mixrad.io/us/en/offer (accessed Aug. 29, 2014); *MixRadio*, Microsoft, http://apps.microsoft.com/windows/en-us/app/mixradio/4e9de0ba-ed72-4ffc-866d-cf964def6ddf (accessed Oct. 2, 2014).

[116] [redacted]

d. *Same rights test:* Aside from the ability of users to play cached downloads of radio stations, the functionality offered by Nokia MixRadio is very similar to that offered by Pandora and other customizable streaming radio services, and thus the rights at issue are generally comparable to the rights under the statutory license.

192. To be sure, the Nokia agreements are different in certain respects. The MixRadio service is in part bundled with the sale of Nokia devices, and the agreements provide a minimum guarantee tied to the sale of those devices. [redacted]

## C. Music Video Services

193. There are a number of significant issues with services/agreements for streaming music video that complicate using them as potential benchmarks. As discussed in Section III.A.1 -- services streaming user-generated content ("UGC") under the DMCA "safe harbor" provision have exceptional bargaining power in negotiations with rights holders. Due to the time, effort, and expense of tracking infringing content and sending "take-down" notices, and the "whack a mole" problem, rights owners often cannot practically prevent such services from serving user-generated content that incorporates or replicates copyrighted materials. For example, rights owners can agree to "monetize" their content on YouTube with advertising, at rates dictated by YouTube. But if the rights owner refuses the terms, the materials will effectively still be available on the service and the rights owner will receive nothing.[117]

194. Against this backdrop, YouTube in particular has been criticized for its aggressive negotiating tactics with rights holders, including those pursuant to the impending rollout of its paid subscription service.[118] For example, independent music companies have complained that YouTube has issued an ultimatum: either they agree to YouTube's terms, or their videos will be blocked. In that case they will lose the ability to "monetize" or otherwise control their content (even though user-generated content may still be served by YouTube).[119] In addition, YouTube is reputed to be a preeminent service for music

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[117] See, e.g., *Here's why the labels really want a stake in SoundCloud*, Gigaom, https://gigaom.com/2014/07/11/heres-why-the-labels-really-want-a-stake-in-soundcloud/ (accessed Oct. 3, 2014) ("But then YouTube did something quite ingenious by giving rights holders a choice, and basically telling them: You can either take down your music from our site, or you can monetize any video that uses it — including those viral hits that gather millions of views in just a few hours. The labels eventually all gave in . . . .")

[118] Ed Christman, *Inside YouTube's Controversial Contract with Indies*, Billboard (June 20, 2014), http://www.billboard.com/biz/articles/news/digital-and-mobile/6128540/analysis-youtube-indie-labels-contract-subscription-service (accessed June 25, 2014).

[119] *YouTube, Record Labels And The Retailer Hegemony*, Word Press (June 18, 2014), http://musicindustryblog.wordpress.com/2014/06/18/youtube-record-labels-and-the-retailer-hegemony/; *Indie Music Takedown Begin 'In Days' As Google Preps YouTube Music Service Launch*, Hypebot, *http*://hypebot.com/hypebot/2014/06/indie-labels-face-takedowns-as-google-preps-youtube-music-service-launch html (accessed June 25, 2014).

discovery.[120] Few artists or labels are likely to be in a position to refuse Google's terms for YouTube.

195. YouTube's bargaining power appears to be reflected in the net effective rates it has negotiated. For example, Exhibit 13 shows that YouTube [redacted]

196. For all these reasons just discussed, agreements with streaming video services that serve user generated content under the DMCA's "safe harbor" provision are unlikely to constitute appropriate benchmarks. An analysis of the four tests confirms this conclusion.

    a. *Willing buyer and seller test*: The DMCA "safe harbor" provision provides exceptional bargaining power to services streaming user-generated content. Many rights holders cannot effectively deny a license to YouTube or similar services. Therefore, these agreements score poorly on the "willing seller" test.

    b. *Same parties test*: YouTube in particular occupies a unique position in the industry and is not a typical buyer of streaming music streaming services. Vevo is owned by a number of record companies. Therefore, these agreements score poorly on the "same parties" test.

    c. *Statutory license test*: Due to the essentially compulsory nature of the rights grants to services operating under the "safe harbor" provision, these agreements score poorly on the "statutory license" test.

    d. *Same rights test:* YouTube and other licensed video services contract for different rights than the statutory license. Video services are different than audio streaming services, and it is my understanding that rights holders negotiate differently with video services than with streaming audio services. Moreover, entities operating under the DMCA "safe harbor" provision also have different rights. Hence, these agreements score poorly on the "same rights" test.

197. Summing up, although YouTube and similar services occupy an important niche in the market, there are a number of significant issues that complicate using them as potential benchmarks.

## D. Other Services

[120] See "The Infinite Dial 2014", Edison Research and Triton Digital, p. 54, which finds that "YouTube is the Top Source Among 12-24s For Keeping Up-To-Date with Music."

198. There are certain services that do not fall within the spectrum of potential comparable benchmarks.

***1 -- Services operating under the "pureplay" license***

199. Under the WSA, and the terms of the WSA pureplay settlement agreement, "pureplay" rates cannot serve as a potential benchmark in the current rate proceeding. Accordingly, I have not considered such rates as potential benchmarks in this proceeding.

***2 -- Terrestrial radio***

200. Congress has made the determination that broadcasters do not need to compensate copyright owners for sound performances on terrestrial radio. There is no market between willing buyers and willing sellers of copyrighted content for terrestrial radio, and accordingly no market evidence for terrestrial which could serve as potential comparable benchmarks in this proceeding.

***3 -- Small Services***

201. As I will now discuss, the proposed rates are formed by taking averages of data from each service in Category A, after making appropriate adjustments to each account for interactivity and other factors. Because generally the averages are formed by weighting each service's data by its revenue, the inclusion of small services would have a correspondingly small effect on my calculations.

## VI. Calculations and Adjustments to Potential Benchmarks and Other Direct Agreements

202. For each potential benchmark, I apply a set of adjustments consistent with those that the Judges concluded in Web III would result in a benchmark in "the zone of reasonableness."[121]

203. Details of the calculations are summarized in Appendix 1. To preserve the maximum amount of information, Appendix 1 treats each service-label pair as a separate potential benchmark. When summarizing the rates among the various services, I have chosen the revenue-weighted average. Weighting by revenues is appropriate because it represents the "market" rates. Further, services generating larger revenues would be expected to have a greater impact on the prices that would hypothetically be determined by willing buyers and willing sellers.[122]

[121] Web III Remand, p. 66.

[122] To the extent that a different result is obtained by weighting by revenues as compared to streams, revenue-weighting places relatively less weight on services obtaining lower revenue per stream. It is not a long-run market equilibrium for services to "buy" streaming share by deriving exceptionally low revenue from their service (either as fees from listeners or as ad revenues). In the long run, such services will either increase their rates or cease to exist.

## A. Potential Interactive Benchmarks

### *1 -- The minimum per-play fee and minimum revenue shares in agreements*

204. In addition to stated per-play rates and percentages of revenues, direct agreements also include other payment "branches" such as minimum guaranteed total payments over the course of the agreement. Some sources of value such as per-subscriber minimum payments and conversion/upsell incentives are embedded in effective monthly per-play rates, whereas other valuable considerations (such as equity stakes) are not. Also, these agreements usually specify no more than a two year term, which is substantially shorter than the five year statutory license.

205. To compute an adjusted benchmark using any service operator's agreements as a starting point, I begin with a minimum per-play rate equal to the average minimum per-play rate defined in the agreements. I include all "interactive" products offered by the operator that are shown in the performance statements for which a minimum per-play rate is specified in the agreements. I then calculate an adjusted minimum per-play rate for each directly licensed service-label pair using the monthly performance data. In doing this calculation, I add to the stated per-play rate, where available, the per-play value of other quantifiable contractually-specified considerations such as guaranteed advertising or non-recouped advances.[123] This type of consideration for record labels' content is not captured by the minimum per-play rate and therefore needs to be added for purposes of determining a proposed benchmark for the statutory rate. I note, however, that a number service-label pairs' product offerings are not subject to a minimum per-play rate. In those cases, compensation is determined by other payment branches such as revenue shares and per-subscriber minima. When some, but not all, of a pair's offerings use a minimum per-play rate, to be conservative I compute the "weighted average minimum per-play rate" for that pair using only the offering(s) that use a minimum. Similarly, service-label pairs that have not agreed to a minimum per-play rate are not included in average minimum per-play rate computations.

206. More generally, as detailed in Appendix 1, the direct agreements with "interactive" services provide record companies with the minimum revenue share that generally ranges between 50 percent and 60 percent of the services' revenues (based on the record company's share of total streams), with the majority falling between 55 percent and 60

[123] In this regard I have relied on monthly performance data rather than attempting to evaluate parties' expectations at the time they entered into various agreements. Relying on actual performance in these circumstances is a standard practice. It is reasonable to rely on actual performance data because expectations are difficult to evaluate objectively. Indeed, this practice is referred to as the "Book of Wisdom" in intellectual property litigation. As the Supreme Court stated in *Sinclair Refining Co. v. Jenkins Petroleum Process Co.*, 289 U.S. 689, 698 (1933), "[e]xperience is ... available to correct uncertain prophecy," and is thus a "book of wisdom that courts may not neglect." Thus, determining the rates set in a hypothetical willing buyer/willing seller negotiation "often requires a court to look to events and facts that occurred thereafter and that could not have been known to or predicted by the hypothesized negotiators." *Fromson v. Western Litho Plate and Supply Co.*, 853 F.2d 1568, 1575 (Fed. Cir. 1988). Moreover, information with respect to expectations may be unclear or if clear may be tainted by strategic negotiation considerations.

percent. This defines a conservative range of revenue shares for the purposes of an overall "interactive" benchmark.

***2 -- Adjusting for the value of "interactivity"***

207. Exhibit 5 details the market price of both interactive and statutory paid subscription services (i.e., premium services free of advertisements). Using current market prices, the average "interactive" service price is about $9.86 whereas the average "non-interactive" service price ranges from about $4.84 to $5.27, depending on whether one computes this average using monthly or yearly fees. For example, for most new customers, Spotify, like most other "interactive" services, charges $9.99 per month for its paid version, which provides improved audio quality, cached downloads, and ad free service on all devices. Pandora charges new customers $4.99 per month for its paid, ad-free service, whereas its service is priced at $3.99 per month for "legacy" customers (until their contracts expire). This ratio of average paid service prices (1.87 to 2.04) suggests that a discount factor of no more than 2 (=$10/$5) be applied to "interactive" service rates to adjust for the incremental value listeners place on "interactivity."[124]

208. Using a factor equal to 2 is likely to be conservative, for a number of other reasons.

    a. Because a large fraction of U.S. listeners of free services have already "revealed their preference" for Pandora over "interactive" services, even taking into account price differentials, one should reasonably conclude that the "interactivity" premium is small for most listeners.

    b. Most importantly, upgrading to the paid service provides more incremental benefits to a listener on a service such as Spotify compared to Pandora, since Spotify's free service serves ads more frequently than Pandora's. In addition, Spotify's paid service provides "on-demand" mobile service as well as the ability to cache songs for off-line listening. Furthermore, Spotify's premium service provides substantially better audio quality than its free service and substantially better audio quality than Pandora's paid service.[125]

209. As shown in Exhibit 14, an interactivity factor equal to 2.0 also is conservative in light of the results of Dr. McFadden's conjoint survey. Using the entire sample of respondents I

[124] In dividing interactive rates by the interactivity adjustment factor to remove the value of interactivity, I follow past practices. In Web II and Web III, Dr. Pelcovits adjusted the average "interactive" services' effective per-play rate according to his estimate of the relative value of "interactivity" compared to the statutory functionality. As his adjustment factor, Dr. Pelcovits used the ratio of the average market prices of the ad-free paid subscription versions of each service.

[125] Spotify offers up to 160 kbps for its free service and up to 320 kbps on its paid service. *What bitrate does Spotify use for streaming?*, Spotify, https://support.spotify.com/us/learn-more/faq/#!/article/What-bitrate-does-Spotify-use-for-streaming (accessed Oct. 1, 2014.) "Pandora on the Web plays 64k AAC+ for free listeners and 192kbps for Pandora One subscribers. All in-home devices play 128kbps audio, and mobile devices receive a variety of different rates depending on the capability of the device and the network they are on, but never more than 64k AAC+." *Audio Quality*, Pandora, http://help.pandora.com/customer/portal/articles/90985-audio-quality (accessed Oct. 1, 2014.)

summed the average willingness to pay for various attributes – no advertising, on-demand listening, mobile service, playlist formation, catalog size, etc. – for hypothetical interactive and statutory services. In this analysis, I have assumed that playlist formation and catalog size were chosen to reflect typical services that may now exist in the marketplace.

210. These calculations result in an interactivity ratio of 1.90, which indicates that the assumed interactivity ratio of 2.0 is conservative.

211. I have also considered the possibility that the percentage of revenue might vary with prices paid by consumers, with services charging a higher price to listeners paying a higher percentage of revenue. In that regard, I note that one should only apply the interactivity adjustment to the per-play rate. Applying it to the percentage of revenue branch would constitute a form of double counting, since "non-interactive" revenues are already discounted by the differences in market prices between interactive and non-interactive subscription services.

***3 -- Adjustment for numbers of royalty-bearing plays: skips and pre-1972 recordings***

212. I note that most directly licensed agreements define "royalty-bearing plays" to exclude at least some "skips" of limited duration, whereas statutory services must pay for skips. In addition, it is possible that listeners on "interactive" services have different play habits compared to the listeners of statutory services.

213. I also understand that major statutory services such as Pandora and Sirius contend that they do not have to pay for sound performances recorded prior to 1972 under federal copyright law. In contrast, I understand that most direct licensees are contractually bound to pay royalties for pre-1972 recordings. To be conservative, I have assumed that pre-1972 recordings are not covered by the statutory license.

214. I understand that DMCA-compliant services do not permit unlimited skips; I observe that generally they limit users to no more than 6 skips per hour (per station). Also, Spotify and other interactive services often do not pay for plays that are less than 30 seconds in length. However, statutory licensees do pay for skips. Adjusting the per-play rates to account for all of the differences in the number of royalty bearing plays ensures that the per-play payments of statutory services do not constitute a greater percentage of revenue than they do for the directly licensed "interactive" services.

215. Because these services limit the number of skips per hour (per station), an hourly comparison is most natural. An hourly comparison also offers a more accurate analysis of the effect of skips on services' costs than does a monthly comparison. Total monthly plays would tend to be more influenced by factors such as differences in listener habits, tastes, or other service features such as the frequency and obtrusiveness of ads, and whether the service "times out" without user interaction or plays continuously.

216. Although most interactive services do not report listener hours, Pandora does so in its SEC filings. As shown in Exhibit 15, based on Pandora's listener hour reporting, one can reasonably estimate the number of royalty-bearing plays per hour of musical performances

(assuming that is the only content streamed during that hour, over the period quarter 1 2011 – quarter 2 2014), using reasonable estimates of the average length of skips, minutes of ads per hour, and song length.[126] One can compute the number of plays that would result if the six hourly skips were free instead of royalty-bearing.[127] The ratio is about 1.1.

217. Although this ratio is close to one, in light of all these considerations and countervailing factors, it is reasonable and conservative to postulate a discount by a factor of no more than 1.1 to account for any difference in royalty-bearing plays. I will use this factor in my calculations.[128]

***4 -- Valuations of non-per-play financial considerations***

218. The interactive agreements provide a variety of non-per-play financial considerations, including guaranteed minimum payments and advertising concessions. I have apportioned these benefits monthly, on a per-play basis. For example, for one label's agreement with [redacted] the value of advertising alone is equivalent to [redacted] per play. This should be added to the minimum per-play rate prior to adjusting for the value of interactivity and the number of plays per month. However, to be conservative, when this value is not clearly quantifiable on a per-play rate on the basis of agreements, I exclude it from the analysis (i.e., in that case I assume it takes a zero value).

***5 -- Adjustments due to unquantified sources of value***

219. The interactive agreements in question also provide a variety of non-per-play considerations which have not been quantified at this time, including data provision, equity stakes, and assurances to expand internationally. It is reasonable to apportion a substantial per-play amount as the value of these provisions. However, to be conservative, I have not attributed any value to these provisions.

***6 -- Adjustment for independent record company deals and streams***

220. The Judges in Web III criticized Dr. Pelcovits' analysis because it relied exclusively on agreements between services and major record labels. Independent record companies have less extensive catalogs compared to major record companies such as Universal, Sony, and Warner. And interactive services tend to have much larger catalogs than statutory services.

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[126] If all content is music, then dividing total content costs by the per-play price provides an estimate of the number of royalty bearing plays of musical content. Dividing the estimated number of royalty bearing plays by the number of listener hours yields an estimate of the number of royalty bearing plays per hour. If non-music content is also included (and costly), this calculation would overstate the number of estimated royalty bearing musical plays, but the number of listener hours would also include non-musical streams. As long as non-musical content is not more expensive (per hour) than musical content, this calculation provides a conservative estimate of the number of royalty bearing musical plays per listening hour that consist exclusively of music.

[127] Details are shown in Exhibit 15.

[128] Specifically, after adjusting rates downward to account for the value of interactivity, I divide the resulting rates by this factor to account for the cost of skips.

Therefore, all else equal, one would expect that, compared to majors, independents may negotiate less beneficial arrangements.

221. My staff and I have reviewed a set of agreements between independent recording labels and prominent streaming services. I understand that there are many independent recording labels. While a general analysis is therefore not possible at this time, I have found that some independent labels have entered into agreements that provide substantial compensation from services comparable to that received by major labels. For example, [redacted]. I also note that the aforementioned independent record label [redacted].

222. I also understand that many independent record companies have the option to "opt in" to deals struck by major companies with which the independents are affiliated. Presumably independents choose not to do so when they expect to obtain a more preferred agreement through direct negotiations.

223. However, despite the lucrative elements in at least some agreements between services and independent labels, to be conservative I will assume that in separately negotiated agreements independent record companies would not receive any of the non-per-play financial or unquantified considerations major record companies receive (e.g., MFNs, advertising guarantees, or upfront guaranteed fees). I also assume that these independent record companies receive the same per-play rates and proportionate revenue shares as the majors.

224. I note that Nielsen Soundscan indicated that the 2013 market share of independent record companies by ownership of sound recordings was nearly 35%.[131] I also note that a substantial portion of those sound recordings were distributed by major labels.

225. In total, independent recording labels' account for a (simple) average of approximately 76% of streams from the interactive services I have examined. To be conservative, I will assume that when statutory webcasters pay the same price for each stream, independent record companies' aggregate distributed share of streams are assumed to be similar to this share, *i.e.*, about 24%. (See Appendix 1.)

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[129] [redacted]

[130] [redacted]

[131] See, Ed Christman, *What's Behind the Digital Download's Decline and Can Streaming Save the Day? (From The Magazine)*, Billboard (Jan. 10, 2014), http://www.billboard.com/biz/articles/news/record-labels/5869521/whats-behind-the-digital-downloads-decline-and-can-streaming (accessed Sept. 23, 2014) and *Indies still #1: Billboard Indie Label Market Share increases 2.0 Percent to 34.6 Percent in 2013!*, American Association of Independent Music (Jan. 15, 2014), http://a2im.org/2014/01/15/indies-still-1-billboard-indie-label-market-share-increases-2-0-percent-to-34-6-percent-in-2013/ (accessed Sept. 23, 2014).

***7 -- 2013/14 to 2016-2020 adjustment***

226. After making the above adjustments, potential benchmark rates derived from each of these "interactive" services lie near the 2015 statutory rates. As noted previously in Section IV.B, it is reasonable to increase rates from 2015 statutory rates to the benchmark levels by $0.00008 per year.

***8 -- Summary: adjusted interactive benchmark rates***

227. Exhibit 16 provides a chart that summarizes the result of making these adjustments.

228. A table summarizing the per-play rates and percentages of revenue based upon the interactive agreements is as follows. This is based upon a revenue weighted average of the adjusted minimum per-play rates computed for each of the potential Category A benchmarks, and the range of applicable effective percentages of revenue in the agreements.

| | **Per-play Rate** | **Percentage of Revenue** |
|---|---|---|
| 2016 | $0.0025 | 55% |
| 2017 | $0.0026 | 55% |
| 2018 | $0.0027 | 55% |
| 2019 | $0.0028 | 55% |
| 2020 | $0.0029 | 55% |

Details are contained in Appendix 1.[132] As noted, these proposed rates are based upon June 2013 – May 2014 data.

## B. Programmed and/or Customized/Personalized Webcasting Services

***1 -- iHeartMedia/Warner***

*(1)* [redacted]

[132] The 2016 rate is derived by adding $0.00008 x 2 to the adjusted 2014 rate.

[redacted]

234. As shown in Exhibit 15 and discussed above, it is reasonable and conservative to postulate a discount by a factor of no more than 1.1 to account for the relatively larger expected number of royalty-bearing plays on a typical statutory service.

*(3) 2013/14 to 2016-2020 adjustment*

235. To account for changes over time, I adjust the minimum rate using the same factor ($0.00008 per year) used in the interactive benchmark.

*(4) Summary: [adjusted iHeartMedia/Warner rate*

236. The following chart summarizes the adjusted potential benchmark rates derived through the above analysis. Details are in Appendix 1.[135]

[133] [redacted]

[134] [redacted]

| | Per-play Rate | Percentage of Revenue[136] |
|---|---|---|
| 2016 | [redacted] | [redacted] |
| 2017 | [redacted] | [redacted] |
| 2018 | [redacted] | [redacted] |
| 2019 | [redacted] | [redacted] |
| 2020 | [redacted] | [redacted] |

***2 -- Nokia MixRadio***

237. As noted, the agreed upon royalty rate for the free-to-consumer MixRadio service in the Nokia agreements generally is [redacted] For the premium service, the labels are entitled to [redacted]

238. Putting aside [redacted] are instructive in this proceeding.

239. In sum, the rates for the iHeartRadio and Nokia MixRadio directly licensed non-interactive radio services are informative and confirm the reasonableness of my proposed rates based on the Category A set of services.

## C. YouTube and Vevo

240. I also have calculated effective rates for YouTube and Vevo. Unlike most direct licensees, these services do not have minimum per-play rates; instead, compensation is determined by a percentage of attributable revenue. In addition, like iHeartMedia, YouTube provides substantial compensation guarantees to major recording labels. I calculate an effective per-play rate for these services by dividing total compensation for licensed content by the total number of applicable plays. I also have adjusted those rates for on-demand functionality.

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[135] I note that these are particularly conservative estimates. [redacted]

[136] The actual effective percentage of revenue for the agreement between iHeartMedia and Warner [redacted]. I have capped the percentage of revenue here to 55%, consistent with the percentages I have derived from the Category A set of interactive agreements and which is included in my primary rate proposal.

241. Accounting for [redacted] As discussed above, this is consistent with YouTube exerting exceptional bargaining power in negotiations done in the shadow of the DMCA safe harbor provision.

242. Exhibit 18 shows the effect of applying to YouTube's effective rates the same interactivity adjustment (discount) factor that was used for the interactive benchmarks in the calculations reported in Section VI.A. However, no countervailing adjustment is made for the depressing effects of UGC and the safe harbor provision on the negotiated rates. Under those conditions, [redacted]

243. These findings are consistent with my conclusion that the shadow of the safe harbor provision tends to have a depressing effect on rates negotiated with YouTube and other services streaming user generated content. Because all services substitute for one another to some degree, it is likely that this depression in rates has been evidenced for other interactive services. However, to be conservative, I do not adjust my proposed rates upward to account for this effect.

244. The following chart summarizes the effective blended rates for the YouTube and Vevo set of agreements. Details are in Appendix 1.

| | Per-play Rate | Percentage of Revenue |
|---|---|---|
| 2016 | [redacted] | [redacted] |
| 2017 | [redacted] | [redacted] |
| 2018 | [redacted] | [redacted] |
| 2019 | [redacted] | [redacted] |
| 2020 | [redacted] | [redacted] |

# VII. Summary of Proposed Rates

## A. The Proposed Rates

245. For the webcasting market, I propose a monthly benchmark rate for free services defined as the greater of two payment branches: (1) a per-play rate, and (2) a percentage of the service's revenue.

246. In addition, for commercial webcasters I propose the same minimum fee as in the past, i.e., a recoupable $500 per each station or channel in a calendar year. For noncommercial webcasters, I am not aware of any market license agreements that would apply in the next rate period that could serve as potential benchmarks. I therefore propose to continue the minimum fee of $500 per station or channel, up to a maximum usage of 159,140 aggregate tuning hours. The rates I propose for commercial webcasters shall apply to usage in excess of 159,140 hours per month. For most, if not all, non-commercial webcasters this $500 minimum likely will be the only leg of the formula that applies because their monthly tuning hours will be below 159,140 hours. I note that, as Exhibit 12 shows, the $500 minimum fee has not discouraged entry into the music streaming industry. Also, the real, inflation-adjusted rate has been declining over time.

247. This proposed rate structure satisfies the Judges' criteria. Compensation based on percentage of revenue branch accounts for the significant variations among buyers, since these variations will be reflected in part by the revenues that are generated. Services with higher revenues can be expected, other things being equal, to place greater value on licenses, and will pay proportionally higher rates. Other concerns are addressed by the minimum per-play rates. For example, the minimum per-play fees would ensure against the possibility that services using the statutory license choose to maximize market share rather than profits.

248. Specifically, I propose a revenue weighted average of the adjusted minimum per play computed for each of the potential Category A benchmarks discussed above, and a percentage of revenue based on the applicable effective percentage of revenue ranges from the agreements. Details are contained in Appendix 1.

249. The following table summarizes my proposed per-play rates and percentages of revenue.

| | **Minimum Per-play Rate** | **Minimum Percentage of Revenue** |
|---|---|---|
| 2016 | $0.0025 | 55% |
| 2017 | $0.0026 | 55% |
| 2018 | $0.0027 | 55% |
| 2019 | $0.0028 | 55% |
| 2020 | $0.0029 | 55% |

## B. The Proposed Rates Are Conservative

250. The rates I have proposed are conservative, for a number of reasons, including the following:

    a. I have adjusted interactive rates downward to account for the value of interactivity. My adjustment is based on the market prices of paid premium (ad-free) interactive and non-interactive services. As shown in Exhibit 7, if instead I

were to compute this value using the choices made by most listeners among "free" (ad-supported) services, then either no adjustment or a smaller adjustment would be called for.

b. The proposed interactive benchmark does not include important sources of value provided by important licensees. For example, over June 2013 – May 2014, [redacted] My computations do not account for the value of this equity.

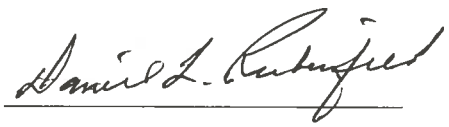
c. Other digital content resellers such as Netflix, Apple iTunes, or Barnes and Noble all pay substantial percentages of revenue – about 70% – for content, substantially more than the 55% I have proposed as part of the "greater of" formula.

d. My proposal allows the same total expected compensation to be generated from a relatively low per-play rate combined in a "greater of" formula with a percentage of revenue that would be generated if the benchmark were solely a per-play rate. Since new entrants often generate little or no revenue, this relatively low per-play rate will facilitate entry and is procompetitive. Total compensation to rights holders should remain unaffected as new entrants gain success in the marketplace and begin to pay based on the percentage of revenue branch.

## VIII. Attachments

I declare under penalty of perjury that the foregoing testimony is true and correct.

Date: October 6, 2014



Daniel L. Rubinfeld

# Attachment A

October 2014

Curriculum Vitae

## DANIEL L. RUBINFELD

**PRESENT POSITIONS**:

Robert L. Bridges Professor of Law, Professor of Economics, Emeritus
University of California, Berkeley, 453 Boalt Hall,
Berkeley, California 94720
Phone: (510) 642-1959
Fax: Office (510) 642-3767
e-mail: drubinfeld@law.berkeley.edu

Professor, NYU Law School, Fall Semester, 427 Vanderbilt Hall
40 Washington Square West, New York, NY 10003, Phone: (212) 992 8834
drubinfeld@nyu.edu, Fax: (212) 995-4590

**ACADEMIC STUDIES**: Princeton, Mathematics, B.A., June 1967
M.I.T., Economics, M.S., September 1968
M.I.T., Economics, Ph.D., June 1972

**TEACHING EXPERIENCE**:

Suffolk University, Boston, Massachusetts
Full-time Economics Instructor, 1968-70
Wellesley College, Wellesley, Massachusetts
Full-time Economics Instructor, 1970-71
University of Michigan, Ann Arbor, Michigan
Assistant Professor of Economics, 1972-77
Associate Professor of Economics and Law, 1977-82
Professor of Economics and Law, 1982-83
Research Associate, Institute of Public Policy Studies, 1972-82
University of California, Berkeley, 1983 - present
Robert L. Bridges Professor of Law and Professor of Economics, 1983-Present
Stanford University
Visiting Professor of Law, Spring 1989 (Economics and Public Policy)
University of Geneva
Visiting Professor, May 1991 (Antitrust Law and Economics)
Swiss National Bank, Studienzentrum Gerzensee (one week for each visit)
Visiting Professor of Law and Economics, Spring 1995-97 (Economics of Private Law), 2002 (Political Economy of Federalism), 2004, 2007 (Competition Law and Economics), 2009, 2011 (Competition Law and Economics)
New York University
Visiting Professor, Professor of Law, Spring 1999, Fall 2000, 2003, 2005-2006, 2008-2012 (Quantitative Methods in Law, Antitrust Law and Economics)
University of Virginia
Visiting Professor of Law, January 2004 (Antitrust Law and Economics)

University of Hamburg
Visiting Professor of Law, May 1999, 2002 (Quantitative Methods), June, 2008 (Antitrust Law and Economics)
University of Bergen
Visiting Professor of Law, August 2006, August 2007, August 2008, August 2010
Catholic University of Portugal, Lisbon
Visiting Professor of Law, April 2009, April 2010
Kiev School of Economics
Visiting Professor, April 2010

**GOVERNMENT POSITIONS**

Economist, Staff of President's Council of Economic Advisers, Summer 1969
Deputy Assistant Attorney General, Antitrust Division, U.S. Department of Justice, June 1997-Dec 1998

**GOVERNMENT CONSULTING**

Member, Ann Arbor Rent Control Study Commission, 1973
Consultant, Urban Institute, 1973
Consultant, U.S. Treasury, Program in State and Local Finance, 1984-85
Consultant, National Academy of Sciences, Panel on Taxpayer Compliance, 1985-86
Consultant, U.S. Consumer Product Safety Commission, Safety of All-Terrain Vehicles, 1987-88
Consultant and Lecturer, Federal Judicial Center, 1993-97, Use of Regression Analysis by the Courts
Consultant, World Bank (South Africa Mission), 1995-1997
Consultant, Antitrust Division, 1999, *U.S. v. Microsoft*
Consultant, Competition Directorate, European Union, 2003-2004, Merger Simulation
Lecturer, Federal Trade Commission, June-July, 2003, Antitrust Economics
Consultant, Federal Trade Commission, Antitrust Division, Dept. of Justice, various State Attorneys General

**OTHER POSITIONS HELD**:

Research Assistant, William G. Bowen, 1966-67
Research Assistant, Paul A. Samuelson, 1971
Consultant, M.I.T.- Harvard, Joint Center for Urban Studies, Spring and Summer, 1972
Consultant, Urban Institute, 1973
Consultant, National Academy of Sciences, Committee on the Costs of Automobile Emission Control, Summer 1974
Consultant, National Academy of Sciences, Panel on Statistical Assessments as Evidence in the Courts, 1984
Consultant, National Academy of Sciences, Panel on Taxpayer Compliance, 1985-86
Chair, Program in Law and Economics, UC Berkeley, 1986-97, Co-Chair, 2000-
Member, National Academy of Sciences, Working Panel on Field Experimentation in Criminal Justice, 1986-87
Chair, Program in Jurisprudence and Social Policy, U.C. Berkeley, 1987-1990, 1998-1999
Member, Board of Directors, American Law and Economics Association, 1994-1996, 2001-2003
Secretary-Treasurer, American Law and Economics Association, 2003-2004
Vice President, American Law and Economics Association, 2004-2005

President, American Law and Economics Association, 2005-2006
Vice Chair, ABA Section on Antitrust, Committee on Economics, 1997-1999
Member, National Academy of Sciences, NSF Blue Ribbon Commission on Digital Preservation, 2007-2010

**ACTIVITIES AND HONORS**:

Princeton University, 1967, Magna Cum Laude, Phi Beta Kappa
Woodrow Wilson Fellow, 1967
National Science Foundation Fellowship, 1968-69
National Science Foundation Dissertation Fellowship, 1971-72
Winner, National Tax Association, Outstanding Doctoral Dissertation Award, 1972
Research Fellow, National Bureau of Economic Research, Cambridge, Massachusetts, 1975-76
Editorial Board, Public Finance Quarterly, 1980-2003
Editorial Board, Law and Society Review, 1982-1985, 1989-1999
Advisory Panel, NSF, Program in Law and Social Science, 1982-84
Editorial Board, Evaluation Review, 1985-1987
Faculty Advisory Board, U.C. Berkeley, Center for Real Estate and Urban Economics, 1983-97, 2000-
Co-Editor, International Review of Law and Economics, 1987-2003
Lecturer, California Continuing Judicial Studies Program, 1988-1989
Oversight Panel, NSF Program in Law & Social Science, 1988
Board of Directors, LECG, 1995-1997
Board of Directors, Atlas Assets, Inc., 1989-1997, 1999-2008
Member, Correspondent Comm., Interuniversity Consortium for Political & Social Research, 1991-
Editorial Board, Law and Social Inquiry, 1992-1999, 2002-2004
Fellow, Center for Advanced Study in the Behavioral Sciences, 1992-93
Ida Beam Distinguished Lecturer in Law and Economics, University of Iowa, Spring 1995
John Simon Guggenheim Fellowship, 1995
Faculty Advisory Board, UC Berkeley, Burch Ctr. for Tax Policy & Public Finance, 1994-97, 1999-
Elected to American Academy of Arts and Sciences, 2001
Advisory Council, Master Program on Law & Economics, Universidad de Buenos Aires, 2003-
Research Associate, Law School, Australian National University, 2003-
Editorial Board, Journal of Australian Economic Education, 2003-
Editorial Board, The Review of Law and Economics, 2004-
Fellow, National Bureau of Economic Research, 2004-
Member, International Academic Council, U. of St. Gallen, Masters in Law & Economics, 2005-
Honorary Doctorate, U. of Basel, November 2008.
Co-Editor, Journal of Legal Analysis, 2008-

**PUBLICATIONS**:

Books

1. STATISTICAL ANALYSIS OF ECONOMIC AND FINANCIAL DATA, Dynamics Associates, Cambridge, 1971, Revised Edition, 1974.

2. ECONOMETRIC MODELS AND ECONOMIC FORECASTS (with Robert S. Pindyck), McGraw-Hill, January 1976. Second Edition, 1981, Spanish, Japanese, and Chinese versions available; Third Edition, 1990; Fourth Edition, 1998.

3. ESSAYS ON THE LAW AND ECONOMICS OF LOCAL GOVERNMENTS (Editor), COUPE Papers on Public Economics, Urban Institute, December 1979.

4. AMERICAN DOMESTIC PRIORITIES: AN ECONOMIC APPRAISAL (Co-editor with John M. Quigley), University of California Press, 1985.

5. MICROECONOMICS (with Robert S. Pindyck), MacMillan, 1989, Second Edition, 1992, Italian, Spanish, and Russian editions, Third Edition, 1995, Portuguese edition; Fourth edition, 1998, Japanese, Chinese editions; Fifth Edition, 2000, Uzbek, Indonesian, German, Korean editions, Sixth Edition, 2005, Seventh Edition, 2009, Croatian, French, Taiwanese, and Basque editions, Eighth Edition, 2013.

6. DID MICROSOFT HARM CONSUMERS: TWO OPPOSING VIEWS (with David S. Evans, Franklin M. Fisher, and Richard L. Schmalensee), AEI-Brookings Joint Center for Regulatory Studies, 2000.

7. ECONOMETRICS: LEGAL, PRACTICAL, AND TECHNICAL ISSUES (Co-editor with John Harkrider), ABA Antitrust Section, 2005.

Journal Articles

1. "Credit Ratings and the Market for General Obligation Municipal Bonds," National Tax Journal, March 1973, pp. 17-27.

2. "The Determination of Equalized Valuation: A Massachusetts Case Study," Public Finance Quarterly, April 1975, pp. 153-161.

3. "Voting in a Local School Election: A Micro Analysis," Review of Economics and Statistics, February 1977, pp. 30-42.

4. "Suburban Employment and Zoning: A General Equilibrium Analysis," Journal of Regional Science, March 1978, pp. 33-44.

5. "Hedonic Housing Prices and the Demand for Clean Air" (with David Harrison, Jr.), Journal of Environmental Economics and Management, March 1978, pp. 81-102, in Joseph Herriges and Cathy Kling, eds., REVEALED PREFERENCE APPROACHES TO ENVIRONMENTAL VALUATION: Volume II, Ashgate Publishing Limited, 2008.

6. "The Long-Run Effects of a Residential Property Tax and Local Public Services" (with A. Mitchell Polinsky), Journal of Urban Economics, April 1978, pp. 24l-262, reprinted in John M Quigley, ed., THE ECONOMICS OF HOUSING, Edward Elgar, 1997.

7. "On the Measurement of Benefits in an Urban Context: Some General Equilibrium Issues" (with Paul N. Courant), Journal of Urban Economics, June 1978, pp. 346-356.

8. "The Air Pollution and Property Value Debate: Some Empirical Evidence" (with David Harrison, Jr.), Review of Economics and Statistics, November 1978, pp. 635-638.

9. "The Distribution of Benefits from Improvements in Urban Air Quality" (with David Harrison, Jr.), Journal of Environmental Economics and Management, December 1978, pp. 313-332.

10. "Tax Limitation and the Demand for Public Services in Michigan" (with Paul N. Courant and Edward M. Gramlich), National Tax Journal, Supplement, June 1979, pp. 147-157.

11. "Public Employee Market Power and the Level of Government Spending" (with Paul N. Courant and Edward M. Gramlich), American Economic Review, December 1979, pp. 806-817. Reprinted in W. Patrick Beaton (ed.) MUNICIPAL EXPENDITURES REVENUES AND SERVICES (New Brunswick: Rutgers University, 1983), pp. l80-202.

12. "Why Voters Support Tax Limitation Amendments: The Michigan Case" (with Paul N. Courant and Edward M. Gramlich), National Tax Journal, March 1980, pp. l-20. Also in TAX AND EXPENDITURE LIMITATIONS (H. Ladd and N. Tideman, editors), COUPE Papers on Public Economics, Urban Institute, 198l, pp. 37-72.

13. "On the Economics of Voter Turnout in Local School Elections," Public Choice, Fall 1980, pp. 315-331.

14. "Why Voters Turn Out for Tax Limitation Votes" (with Edward M. Gramlich and Deborah Swift), National Tax Journal, March 1981, pp. 115-124.

15. "On the Welfare Effects of Tax Limitation" (with Paul N. Courant), Journal of Public Economics, December 1981, pp. 289-316.

16. "Multiple Regression with a Qualitative Dependent Variable," Journal of Economics and Business, January 1982, pp. 67-78.

17. "Micro Estimates of Public Spending Demand Functions and Tests of the Tiebout and Median Voter Hypotheses" (with Edward M. Gramlich), Journal of Political Economy, June 1982, pp. 536-560.

18. "The Dynamics of the Legal Process" (with Lawrence Blume), Journal of Legal Studies, June 1982, pp. 405-421.

19. "Voting on Public Spending: Differences between Public Employees, Transfer Recipients, and Private Workers" (with Edward M. Gramlich), Journal of Policy Analysis and Management, Summer 1982, pp. 516-533. Reprinted in PROBLEMI DI AMMINISTRAZIONE PUBBLICA, No. 2/1983, pp. 55-88.

20. "Micro-Based Estimates of Demand Functions for Local School Expenditures" (with Theodore C. Bergstrom and Perry Shapiro), Econometrica, November 1982, pp. 1183-1205.

21. "The Distributional Impact of Statewide Property Tax Relief: The Michigan Case" (with Michael Wolkoff), Public Finance Quarterly, April 1983, pp. 131-153.

22. "The Taking of Land: When Should Compensation Be Paid?" (with Lawrence Blume and Perry Shapiro), Quarterly Journal of Economics, February 1984, pp. 71-92.

23. "On Determining the Optimal Magnitude and Length of Liability In Torts," Journal of Legal Studies, August 1984, pp. 551-563.

24. "Budget Reform and the Theory of Federalism" (with John Quigley), American Economic Review, May 1986, pp. 132-137.

25. "The Efficiency of Comparative Negligence," Journal of Legal Studies, June 1987, pp. 375-394.

26. "Tax Reform: Implications for the State-Local Public Sector" (with Paul Courant), Journal of Economic Perspectives, Summer, 1987, pp. 87-100. Reprinted in Samuel Baker and Catherine Elliot (eds.) READINGS IN PUBLIC SECTOR ECONOMICS (Lexington, Massachusetts: D.C. Heath and Company, 1990) pp. 585-507.

27. "Efficient Awards and Standards of Proof in Judicial Proceedings (with David Sappington), Rand Journal, Summer 1987, pp. 308-315.

28. "Tiebout Bias and the Demand for Local Public Schooling" (with Perry Shapiro and Judith Roberts), Review of Economics and Statistics, August 1987, pp. 426-437.

29. "The Welfare Implications of Costly Litigation for the Level of Liability" (with A. Mitchell Polinsky), Journal of Legal Studies, January 1988, pp. 151-164, in Alan O. Sykes (ed.) ECONOMICS OF TORT LAW, Elgar, 2007, and in Chris William Sanchirico (ed.), ECONOMICS OF EVIDENCE, PROCEDURE, AND LITIGATION, Elgar, 2007, Chapter 19.

30. "A Test for Efficiency in the Supply of Public Education" (with Theodore Bergstrom, Perry Shapiro and Judith Roberts), Journal of Public Economics, April 1988, pp. 289-307.

31. "Robbing Peter to Pay Peter: The Economics of Local Public Residency Requirements" (with Paul N. Courant), Journal of Urban Economics, May 1988, pp. 291-306.

32. "The Deterrent Effect of Settlements and Trials" (with A. Mitchell Polinsky), International Review of Law and Economics, June 1988, pp. 109-117.

33. "Micro-Estimation of the Demand for Schooling: Evidence from Michigan and Massachusetts" (with Perry Shapiro), Regional Science and Urban Economics, January 1989, pp. 381-398.

34. "Unobservables in Consumer Choice: Residential Energy and the Demand for Comfort" (with John Quigley), Review of Economics and Statistics, August 1989, pp. 416-425.

35. "Economic Analysis of Legal Disputes and their Resolution" (with Robert Cooter), Journal of Economic Literature, September, 1989, pp. 1067-1097. Reprinted in Richard Posner and Francesco Parisi, eds., ECONOMIC FOUNDATIONS OF PRIVATE LAW, Edward Elgar Publishing, 2002, reprinted in Eric B. Rasmusen (ed.), GAME THEORY AND THE LAW, Edward Elgar Publishing, 2008.

36. "A Note on Optimal Public Enforcement with Settlements and Litigation Costs" (with A.M. Polinsky), Research in Law and Economics, 1989, pp. 1-8.

37. "Trial Courts: An Economic Perspective" (with Robert D. Cooter), Law and Society Review, 1990, pp. 2501-2514.

38. "A Model of Optimal Fines for Repeat Offenders" (with A. Mitchell Polinsky), Journal of Public Economics, September, 1991, pp. 291-306. Reprinted in Peder Andersen, Vibeke Jensen and Jorgen Birk Mortensen, eds., GOVERNANCE BY LEGAL AND ECONOMIC MEASURES, Copenhagen, G-E-C Gad Publishers, 1993, pp. 33-52.

39. "Statistical and Demographic Issues Underlying Voting Rights Cases," Evaluation Review, December, 1991, pp. 659-672.

40. "Private Guarantees for Municipal Bonds: Evidence from the Aftermarket" (with John M. Quigley), National Tax Journal, December 1991, pp. 29-39.

41. "Fiscal Federalism in Europe: Lessons from the American Experience" (with Robert P. Inman), European Economic Review, 1992, pp. 654-660.

42. "Evaluating the Injury Risk Associated with All-Terrain Vehicles: An Application of Bayes' Rule" (with Gregory B. Rodgers), Journal of Risk and Uncertainty, May 1992, pp. 145-158.

43. "Contingent Fees for Attorneys: An Economic Analysis," (with Suzanne Scotchmer), Rand Journal, Autumn, 1993, pp. 343-356.

44. "An Economic Model of Legal Discovery" (with Robert Cooter), Journal of Legal Studies, January, 1994, pp. 435-463, reprinted in Chris William Sanchirico (ed.), ECONOMICS OF EVIDENCE, PROCEDURE, AND LITIGATION, Elgar, 2007, Chapter 14..

45. "The EMU and Fiscal Policy in the New European Community: An Issue for Economic Federalism" (with Robert Inman), International Review of Law and Economics, June, 1994, pp. 147-161.

46. "Designing Tax Policy in Federalist Economies: An Overview," (with Robert P. Inman), Journal of Public Economics, 60, 1996, pp. 307-334.

47. "Antitrust Settlements and Trial Outcomes," (with Jeffrey M. Perloff and Paul Ruud), Review of Economics and Statistics, 1996, pp. 401-409.

48. "Optimal Awards and Penalties when the Probability of Prevailing Varies Among Plaintiffs," (with A. Mitchell Polinsky), Rand Journal, 27, 1996, pp. 269-280.

49. "Federalism and Reductions in the Federal Budget," (with John M. Quigley), National Tax Journal, 49, 1996, pp. 289-302.

50. "Rethinking Federalism," (with Robert P. Inman), Journal of Economic Perspectives, 11 (Fall 1997), pp. 43-64, reprinted in John Kincaid ed., Historical and Theoretical Foundations of Federalism," Sage, 2001.

51. "Does the English Rule Discourage Low-Probability-of-Prevailing Plaintiffs?" (with A. Mitchell Polinsky), Journal of Legal Studies, June 1998, pp. 519-534.

52. "Antitrust Enforcement in Dynamic Network Industries," The Antitrust Bulletin, Fall-Winter 1998, pp. 859-882. (Translated as "Wettbewerb, Innovation und die Durchsetzung des Kartellrechts in dynamischen, vernetzeten Industrien," in GRUR International Gewerblicher Rechtsschutz und Urheberrecht Internationaler Teil, Heft 6, 1999).

53. "Empirical Methods in Antitrust: Review and Evidence," (with Jonathan B. Baker), American Law and Economics Review, Fall, 1999, pp. 386-435.

54. "The Primestar Acquisition of the News Corp./MCI Direct Broadcast Satellite Assets," Review of Industrial Organization, Vol. 16, No. 2, March, 2000, pp. 191-209.

55. "Market Definition with Differentiated Products: The Post-Nabisco Cereal Merger," Antitrust Law Journal, Vol. 68, No. 1, 2000, pp. 163-185. (Reprinted in GLOBAL COMPETITION POLICY: ECONOMICS ISSUES AND IMPACATS, David S. Evans and A. Jorge Padilla, eds., LECG, 2004; also available in Peking University, International and Comparative Law Review, Vol.5:8, July 2007, pp. 94-111.)

56. "Structuring Intergovernmental Grants to Local Governments: Lessons from South Africa," Constitutional Political Economy, Vol. 12, 2001, pp. 173-187.

57. "Can We Decentralize Our Unemployment Policies? Evidence from the United States" (with Robert Inman), Kyklos, March 2001, Vol. 54, pp. 287-308.

58. "U.S. v. Microsoft - An Economic Analysis" (with Franklin M. Fisher), The Antitrust Bulletin, Spring 2001, pp. 1-69.

59. "Vertical Foreclosure in Broadband Access" (with Hal J. Singer) Journal of Industrial Economics, September, 2001, Vol. 49, pp. 299-318.

60. "Merger Simulation: A Simplified Approach with New Applications" (with Roy Epstein), Antitrust Law Journal, Volume 69, No. 3, December 2001, pp. 883-919, reprinted in Stefan Vogt, Max Albert, and Dieter Schmidtchen (eds.), THE MORE ECONOMIC APPROACH TO EUROPEAN COMPETITION LAW, (Conferences on the New Political Economy), Tubingen, 2007.

61. "A Note on Settlements under the Contingent Fee Method of Compensating Lawyers" (with A. Mitchell Polinsky), International Review of Law and Economics, Volume 22, No. 2, September 2002, pp. 217-225.

62. "Aligning the Interests of Lawyers and Clients" (with A. Mitchell Polinsky), American Law and Economics Review, Volume 5, No. 1, Spring 2003, pp. 165-188.

63. "Merger Simulation with Brand-Level Margin Data: Extending PCAIDS with Nests" (with Roy Epstein), Advances in Economic Analysis & Policy: Vol. 4: No. 1, Article 2, Berkeley Electronic Press, March 2004.

64. "Exclusion or Efficient Pricing? The "Big Deal" Bundling of Academic Journals" (with Aaron S. Edlin), Antitrust Law Journal, Volume 72, No. 1, August 2004, pp. 128-159.

65. "Federalism and the Democratic Transition: Lessons from South Africa" (with Robert P. Inman), American Economic Review, Vol. 95, No. 2, May 2005, pp. 39-43.

66. "The Bundling of Academic Journals" (with Aaron S. Edlin), American Economic Review, Vol. 95, No. 2, May 2005, pp. 441-446.

67. "Academic Journal Pricing and the Demand of Libraries" (with Aviv Nevo and Mark McCabe), American Economic Review, Vol. 95, No. 2, May 2005, pp. 447-452.

68. "A Damage-Revelation Rationale for Coupon Remedies (with A. Mitchell Polinsky), Journal of Law, Economics & Organization, Vol. 23, No. 3, October 2007, pp. 653-661.

69. "The Deadweight Loss of Coupon Remedies for Price Overcharges" (with A. Mitchell Polinsky),

Journal of Industrial Economics, Vol. LVI, No. 2, June 2008, pp. 402-417.

70. "Econometric Issues in Antitrust Analysis," Journal of Institutional and Theoretical Economics, Vol. 166(1), 2010, pp. 62-77.

71. "Understanding UPP" (with Roy J. Epstein), B.E. Journal of Theoretical Economics: Policies and Perspectives," Vol. 10, Issue 1, 2010, Article 21.

72. "Online Advertising: Defining Relevant Markets" (with James Ratliff), Journal of Competition Law and Economics, August 7, 2010, pp. 1-34.

73. "On the Pretrial Use of Economists," The Antitrust Bulletin, Vol. 55, No. 3, Fall 2010, pp. 679-687.

74. "Federal Institutions and the Democratic Transition: Learning from South Africa, Journal of Law, Economics, and Institutions, Vol. 28, Issue 4, October, 2012, pp. 783-817.

75. "Would the *Per Se* Illegal Treatment of Reverse Payment Settlements Inhibit Generic Drug Investment?" (with Bret M. Dickey), Journal of Competition Law and Economics, Vol.8, No. 3, 2012, pp. 615-625.

76. "The Use and Threat of Injunctions in the RAND Context," (With James Ratliff), Journal of Competition Law and Economics, January 2013, 1-22.

77. "Understanding the Democratic Transition in South Africa," (with Robert Inman), American Law and Economics Review, January 2013, 2-23.

78. "Airline Network Effects and Consumer Welfare," (with Mark Israel, Bryan Keating, and Bobby Willig," Review of Network Economics, November 2013, 1-36.

79. "Measuring Benchmark Damages in Antitrust," (with Justin McCrary), Journal of Econometric Methods, Vol. 3, January 2014, 63-74.

80. "Is There a Market for Organic Search Engine Results and Can Their Manipulation Give Rise to Antitrust Liability" (with James Ratliff), Journal of Competition Law and Economics, May, 2014, 1-25.

Law Review Articles

1. "The Judicial Pursuit of Local Fiscal Equity" (with Robert Inman), Harvard Law Review, June 1979, pp. 1662-1750.

2. "Quantitative Analysis in Antitrust Litigation" (with Peter Steiner), Law and Contemporary Problems, Autumn 1983, pp. 69-141.

3. "Compensation for Takings: An Economic Analysis" (with Lawrence Blume), California Law Review, July, 1984, pp. 569-628. Also in Austin Jaffe (ed.) RESEARCH IN LAW AND ECONOMICS, Volume 10, 1987, pp. 53-103 as well as Kenneth G. Dau-Schmidt and Thomas S. Ulen (eds.), LAW AND ECONOMICS ANTHOLOGY, 1988, PP. 226-234.

4. "Econometrics in the Courtroom," Columbia Law Review, Volume 85, June 1985, pp. 1048-1097.

5. "The Assignment of Temporary Justices in the California Supreme Court" (with Stephen Barnett), Pacific Law Journal, July 1986, pp. 1045-1197.

6. "Regulatory Takings: The Case of Mobile Home Rent Control," Chicago Kent Law Review, Vol. 67, No. 3, Fall 1992, pp. 923-929.

7. "Sanctioning Frivolous Suits: An Economic Analysis" (with A. Mitchell Polinsky), Georgetown Law Journal, Vol. 82, No. 2, December 1993, pp. 397-435. (translated as "Liti Temerarie E Sanzioni Giudiziarie: Un'Analisi Economica", 14 Rivista Critica del Diritto Privato (1996)).

8. "Reforming the New Discovery Rules" (with Robert Cooter), Georgetown Law Journal, Vol. 84, No. 1, November 1995, pp. 61-89.

9. "Making Sense of the Antitrust State Action Doctrine: Balancing Political Participation and Economics Efficiency in Regulatory Federalism" (with Robert Inman), Texas Law Review, Vol. 75, May 1997, pp. 1203-1299.

10. "On Federalism and Economic Development," Virginia Law Review, Vol. 83, No. 7, October 1997, pp. 1581-1592.

11. "Open Access to Broadband Networks: A Case Study of the AOL-Time Warner Merger" (with Hal J. Singer), Berkeley Technology Law Journal, Vol. 16, No. 2, Spring 2001, pp. 631-675.

12. "3M's Bundled Rebates: An Economic Perspective," Chicago Law Review, Vol. 72, 2005, pp. 243-264.

13. "Antitrust Class Certification: Towards an Economic Framework" (with Bret M. Dickey), N.Y.U. Annual Survey of American Law, Vol. 66, No. 3, 2011, pp. 459-486.

Articles in Books

1. "Credit Ratings, Bond Defaults, and Municipal Borrowing Costs: A New England Study," 1972 PROCEEDINGS OF THE SIXTY-FIFTH ANNUAL CONFERENCE ON TAXATION, National Tax Association, 1972, pp. 331-350.

2. "Property Taxation, Full Valuation, and the Reform of Educational Finance in Massachusetts," in PROPERTY TAXATION AND THE FINANCE OF EDUCATION, Committee on Taxation, Resources and Economic Development (University of Wisconsin Press), 1974, pp.189-201.

3. "Property Values and the Benefits of Environmental Improvements: Theory and Measurement" (with A. Mitchell Polinsky), in Wingo and Evans, eds., PUBLIC POLICY AND THE QUALITY OF LIFE IN CITIES (Johns Hopkins Press for Resources for the Future), 1977, pp. l54-l80.

4. "Market Approaches to the Measurement of the Benefits of Air Pollution Abatement," in Ann Friedlaender, ed., APPROACHES TO CONTROLLING AIR POLLUTION (M.I.T. Press), 1978, pp. 240-279.

5. "Judicial Approaches to Local Public-Sector Equity: An Economic Analysis," in Peter Mieszkowski

and Mahlon Straszheim, eds., CURRENT ISSUES IN URBAN ECONOMICS (Johns Hopkins Press), 1979, pp. 542-576.

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7. "On Super-rationality and the School Voting Process," in Clifford Russell, ed., COLLECTIVE DECISION-MAKING (Johns Hopkins Press), 1979, pp. 75-82.

8. "Property Tax Reduction in Michigan" (with Robert Vishny) in H. Brazer and D. Laren, eds., MICHIGAN'S FISCAL AND ECONOMIC STRUCTURE (University of Michigan Press), 1982, pp. 530-560.

9. "Tax Assignment and Revenue Sharing in the United States," in R. Mathews and C. McLure, eds., TAX ASSIGNMENT IN FEDERAL COUNTRIES, (Australian National Univ. Press), 1983, pp. 205-33.

10. "Residential Choice and the Demand for Public Education: Estimation Using Survey Data" (with Perry Shapiro and Judith Roberts), in H. Timmermans and R. Golledge, eds., BEHAVIOR MODELLING APPROACHES IN GEOGRAPHY AND PLANNING, (Croom Helm), 1986, pp. 179-197.

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12. "Settlements in Private Antitrust Litigation" (with Jeffrey Perloff) in L. White (ed.), PRIVATE ANTITRUST LITIGATION, M.I.T. Press, 1988, pp. 149-184.

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## Attachment B

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**Daniel L. Rubinfeld**

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## Attachment B

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**Serrano v. Priest**, 1982, Deposition, Trial Testimony (Superior Court of California, County of Los Angeles)

**Exhibits Sponsored By Daniel L. Rubinfeld**

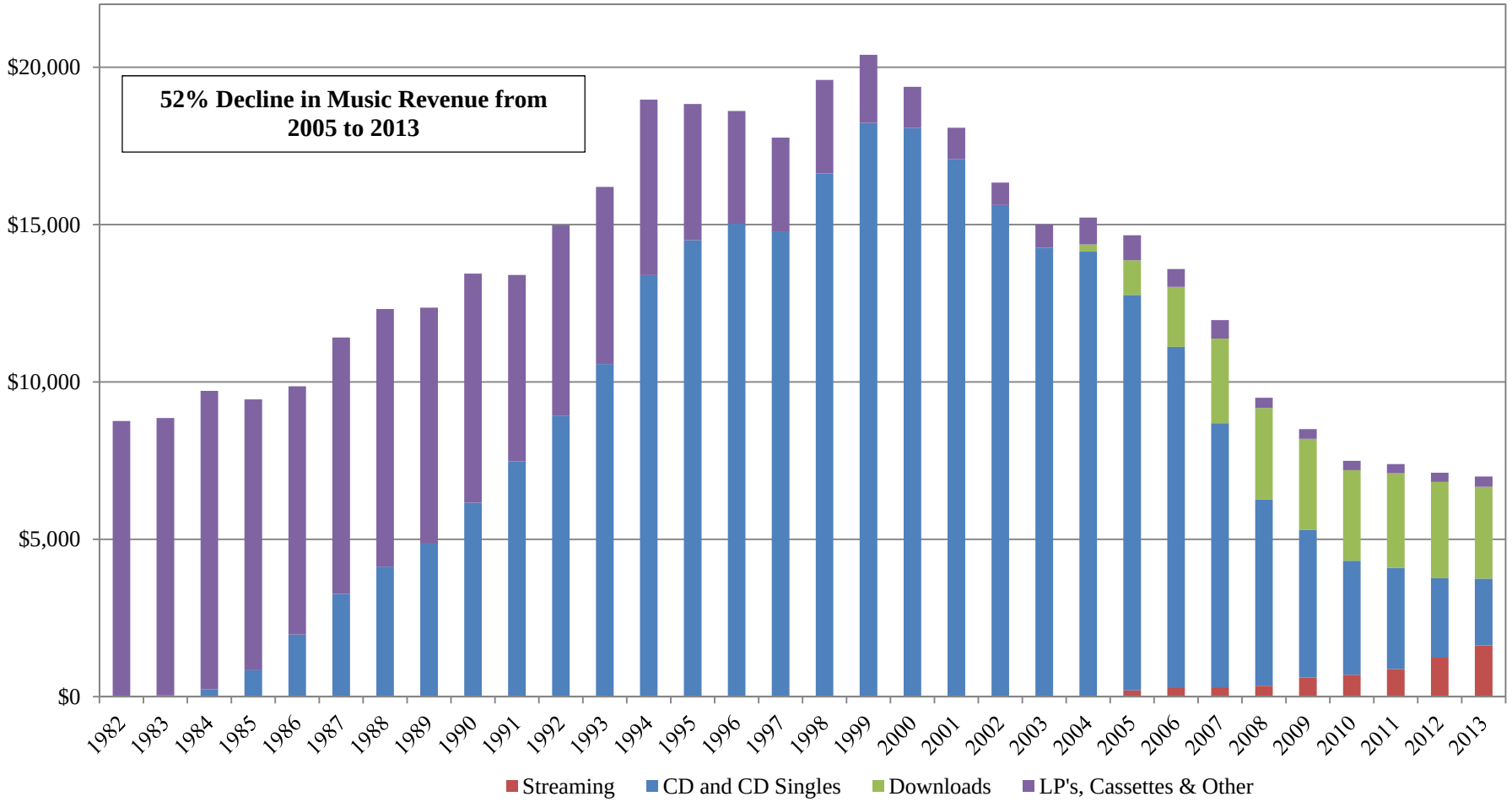
| Exhibit No. | Sponsored By | Description |
|---|---|---|
| SX EX. 009-DP | Daniel Rubinfeld | Exhibit 1 - Music Revenue by Format 1982-2013 |
| SX EX. 010-DP | Daniel Rubinfeld | Exhibit 2 – Timeline for Major Entry Events |
| SX EX. 011-DP | Daniel Rubinfeld | Exhibit 3 - Year-Over-Year Percentage Change in Inflation-Adjusted Streaming and Total Music Revenue 2005-2013 |
| SX EX. 012-DP | Daniel Rubinfeld | Exhibit 4 - Pandora Internet Radio Share Over Time |
| SX EX. 013-DP | Daniel Rubinfeld | Exhibit 5 - Comparison of Subscription Services Pricing |
| SX EX. 014-DP | Daniel Rubinfeld | Exhibit 6 - Percent of Individuals (Age 12+) Who Listened in Last Month |
| SX EX. 015-DR | Daniel Rubinfeld | Exhibit 7a – Pandora Users Prefer Ad-Supported Streaming over Paid Subscriptions |
| SX EX. 016-DR | Daniel Rubinfeld | Exhibit 7b – Global Spotify Users Prefer Ad-Supported Streaming over Paid Subscriptions |
| SX EX. 017-DR | Daniel Rubinfeld | Exhibit 7c – U.S. Consumers Prefer Ad-Supported Streaming over Paid Subscriptions |
| SX EX. 018-DP | Daniel Rubinfeld | Exhibit 8 - Commercials Are a Fair Price to Pay for Free Internet Audio |
| SX EX. 019-DP | Daniel Rubinfeld | Exhibit 9 - Listeners Consider Internet Audio Sound Quality Better than AM/FM Radio |
| SX EX. 020-DP | Daniel Rubinfeld | Exhibit 10 - Internet Audio Commercials Considered Less Plentiful, Less Intrusive, and Less Relevant Than AM/FM Commercials |

| | | |
|---|---|---|
| SX EX. 021-DP | Daniel Rubinfeld | Exhibit 11 - Number of Webcasters and "Entrants" Paying Royalties Through SoundExchange by Year |
| SX EX. 022-DR | Daniel Rubinfeld | Exhibit 12 - iHeartMedia/Warner Minimum Per Play Rate and Minimum Revenue Share Increases |
| SX EX. 023-DR | Daniel Rubinfeld | Exhibit 13 - YouTube Effective Per Play Rates Versus Other Services<br>June 2013 - May 2014 |
| SX EX. 024-DP | Daniel Rubinfeld | Exhibit 14 - Analysis of Buyers' Willingness to Pay All Respondents, Weighted by U.S. Users (Future) |
| SX EX. 025-DR | Daniel Rubinfeld | Exhibit 15a - Calculation of Plays Per Hour Adjustment Ratio |
| SX EX. 026-DR | Daniel Rubinfeld | Exhibit 15b - Estimation of Pandora's Streams Per Hour |
| SX EX. 027-DR | Daniel Rubinfeld | Exhibit 16a - Range of Adjusted Interactive Benchmark Rates<br>June 2013 - May 2014 |
| SX EX. 028-DR | Daniel Rubinfeld | Exhibit 16b - Range of Adjusted Minimum Per Play Rates<br>June 2013 - May 2014 |
| SX EX. 029-DR | Daniel Rubinfeld | Exhibit 16c - Range of Adjusted Effective Per Play Rates<br>June 2013 - May 2014 |
| SX EX. 030-DR | Daniel Rubinfeld | Exhibit 17 - Detailed Adjustments to YouTube Effective Rates<br>June 2013 - May 2014 |
| SX EX. 031-DR | Daniel Rubinfeld | Appendix 1a - Category A Benchmark Analysis |
| SX EX. 032-DR | Daniel Rubinfeld | Appendix 1b - iHeartMedia/Warner Agreement Analysis |
| SX EX. 033-DR | Daniel Rubinfeld | Appendix 1c - Category C Benchmark Analysis |

| | | |
|---|---|---|
| SX EX. 034-DR | Daniel Rubinfeld | Appendix 1d - Summary of Advertising Provisions |
| SX EX. 035-DR | Daniel Rubinfeld | Appendix 1e - Majors' Shares of Plays - Category A Service Products that Include On-Demand Functionality<br>June 2013 - May 2014 |
| SX EX. 036-DR | Daniel Rubinfeld | Appendix 1f - List of Category A Products Included in Minimum Per Play Rate Computation<br>(Includes On-Demand Functionality and Minimum Per Play Rate) |
| SX EX. 037-DR | Daniel Rubinfeld | Appendix 2 - List of Reviewed Agreements |

# Exhibit 1

## Music Revenue by Format (Inflation Adjusted) (millions $)
## 1982-2013




"Streaming" includes: Sound Exchange Distributions, Paid Subscriptions, On-Demand Streaming (Ad-Supported), Synchronization.
"Downloads" include: Download Single, Download Album, Download Music Video, Ringtones & Ringbacks.
"Other" includes: EP, Vinyl Single, Music Video, DVD Audio, SACD, Other Tapes, 8 - Track, Kiosk.

*Source: Recording Industry Association of America, "Year-End Industry Shipment and Revenue Statistics" and "Inflation Adjusted 2013 Dollars (1973 to 2013)*

**SX EX. 009-1-DP**

| Exhibit 2<br>Timeline of Major Entry Events | |
|---|---|
| **2008** | - Spotify began its operation in Europe in 2008.[1] |
| **2009** | - iHeartRadio started featuring music videos that could be played on-demand.[2] |
| **2009** | - In November 2009, MOG launches on-demand subscription service, including radio feature.[3] |
| **2010** | - In August 2010, Rdio launched.[4] |
| **2011** | - Spotify entered the US market and added radio two months later. [5] |
| | - In May 2011, Slacker Premium launched, offering full on-demand capability.[6] |
| | - iHeartRadio launched "New iHeartRadio" in 2011, offering Pandora-style personalized stations.[7] |
| | - In the summer of 2011, Turntable.fm launched, a "listening room" social music service, users enter virtual rooms to listen to music played by rotating DJs and chat with each other.[8] |
| | - In September 2011, MOG launched free, ad-supported version with users earning free music by interacting with the service.[9] |
| | - In October 2011, Rdio offered free access to ad-free music with a monthly limit on amount of free music. [10] |
| | - In late 2011, Rara launched on web and Android mobile (on-demand subscription/no free version).[11] |
| **2012** | - In July 2012, Beats purchased MOG and accelerated the development of its own music service. [12] |
| | - Spotify added a "thumbs up/thumbs down" option to the desktop applications, as well as radio service for iOS mobile devices for free and premium users.[13] |
| | - In September 2012, Nokia MixRadio, an ad-free and subscription-free service for Nokia Lumia devices, launched in the US.[14] |
| **2013** | - Pandora launched Pandora Premieres, a special station allowing on-demand playing of certain featured, pre-release albums.[15] |
| | - Rdio expanded personalization by adding the ability to search and create radio stations by record label as well as personalized stations based on song, artist or genre. It also introduced the ability to vote on tracks to improve stations. [16] |
| | - Rhapsody improved radio customization by incorporating Echo Nest into a radio service.[17] |
| | - In May 2013, Google introduced All Access, an on-demand subscription service which also featured radio.[18] |
| | - In July 2013, Turntable launched a paid subscription option called Turntable Gold.[19] |
| | - In September 2013, Apple launches iTunes Radio an ad-supported service but ad-free for iTunes Match users. [20] |
| | - In December 2013, Turntable.fm shut down so the company could focus on Turntable Live. [21] |
| **2014** | - Rhapsody expanded its radio service with a separate subscription option (unRadio).[22] |
| | - In January 2014, Rdio launched an ad-based, free version for desktops. [23] |
| | - In January 2014, Beats Music launched with a special offer for AT&T customers. [24] |
| | - In March 2014, Samsung announced a new service (run by Slacker) for customers of its Galaxy line of smartphones and tablets. [25] |
| | - In May 2014, Yonder launched its service offering specially licensed phones with unlimited music downloads included in the price of the phone.[26] |
| | - In June 2014, Amazon introduced an on-demand service with a limited selection music as part of its $99 per year "Prime" subscription service.[27] |
| | - In July 2014, ROK Mobile launched, combining no-contract prepaid mobile service with music streaming service.[28] |
| | - In the summer of 2014, YouTube announced plans to introduce its own new premium subscription service. [29] |
| | - Deezer, second only to Spotify internationally, announced it was entering the U.S. market.[30] |

## Exhibit 2
## Timeline of Major Entry Events

*Sources:*

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14 http://techcrunch.com/2012/09/04/play-it-again-sam-nokia-launches-free-music-streaming-service-in-u-s/, accessed October 2, 2014.

15 http://blog.pandora.com/2013/05/21/pandora-premieres-a-new-way-to-discover/, accessed September 23, 2014.

16 http://blog.rdio.com/us/2013/01/new-on-rdio-search-by-label.html, accessed September 29, 2014; http://blog.rdio.com/us/2013/08/find-your-frequency-stations-on-rdio.html, accessed September 29, 2014; http://blog.rdio.com/us/2014/02/rdio-for-ios-its-getting-better-all-the-time.html, accessed September 29, 2014.

17 http://news.rhapsody.com/2013/11/01/welcome-to-perfectly-personalized-radio/, accessed October 2, 2014.

18 http://www.theverge.com/2013/5/15/4334790/google-music-all-access-hands-on-versus-spotify-rdio/in/4095431, accessed September 30, 2014; http://www.theguardian.com/technology/2013/may/15/google-launches-music-streaming-i developer-conference, accessed September 29, 2014.

19 http://www.hypebot.com/hypebot/2013/07/turntablefm-monetizes-with-turntable-gold-said-to-be-under-new-management.html, accessed October 1, 2014.

20 http://www.theverge.com/2013/6/10/4414762/apple-announces-iradio-streaming-music-service, accessed October 4, 2014.

21 http://www.billboard.com/biz/articles/news/5800672/turntablefm-to-shut-down-in-december, accessed October 1, 2014.

22 http://news.rhapsody.com/2014/06/18/introducing-rhapsody-unradio/, accessed October 2, 2014.

23 http://arstechnica.com/business/2014/01/rdio-moves-from-subscription-model-offers-unlimited-free-streaming/, accessed September 29, 2014.

24 http://blog.beatsmusic.com/beats-music-is-here/, accessed September 30, 2014.

25 http://www.engadget.com/2014/03/07/samsung-milk-music/, accessed October 1, 2014.

26 http://www.nytimes.com/2014/05/12/business/media/digital-music-service-to-pose-new-challenge-to-subscription-model.html?_r=0, accessed October 1, 2014.

27 http://money.cnn.com/2014/06/12/technology/enterprise/amazon-prime-music/, accessed October 1, 2014.

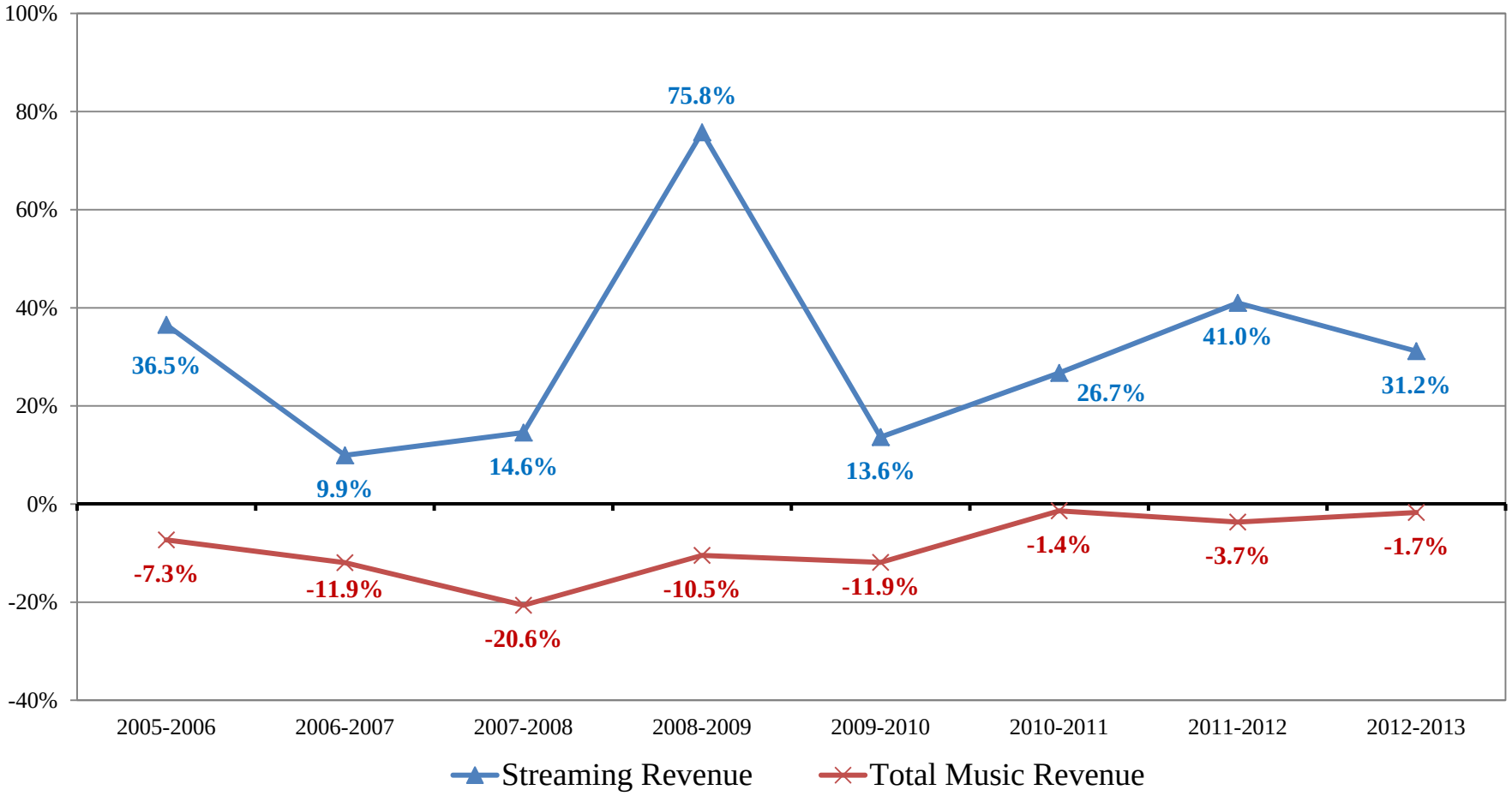
28 https://gigaom.com/2014/06/09/meet-rok-mobile-it-wants-to-be-both-your-mobile-carrier-and-your-digital-music-service/, accessed October 1, 2014.

29 http://www.reuters.com/article/2014/06/17/us-google-youtube-idUSKBN0ES2LO20140617, accessed September 30, 2014.

30 http://www.billboard.com/biz/articles/news/digital-and-mobile/6244191/deezer-finally-coming-to-america-on-sept-15, accessed October 1, 2014.

# Exhibit 3

## Year-Over-Year Percentage Change in Inflation-Adjusted Streaming and Total Music Revenue 2005-2013



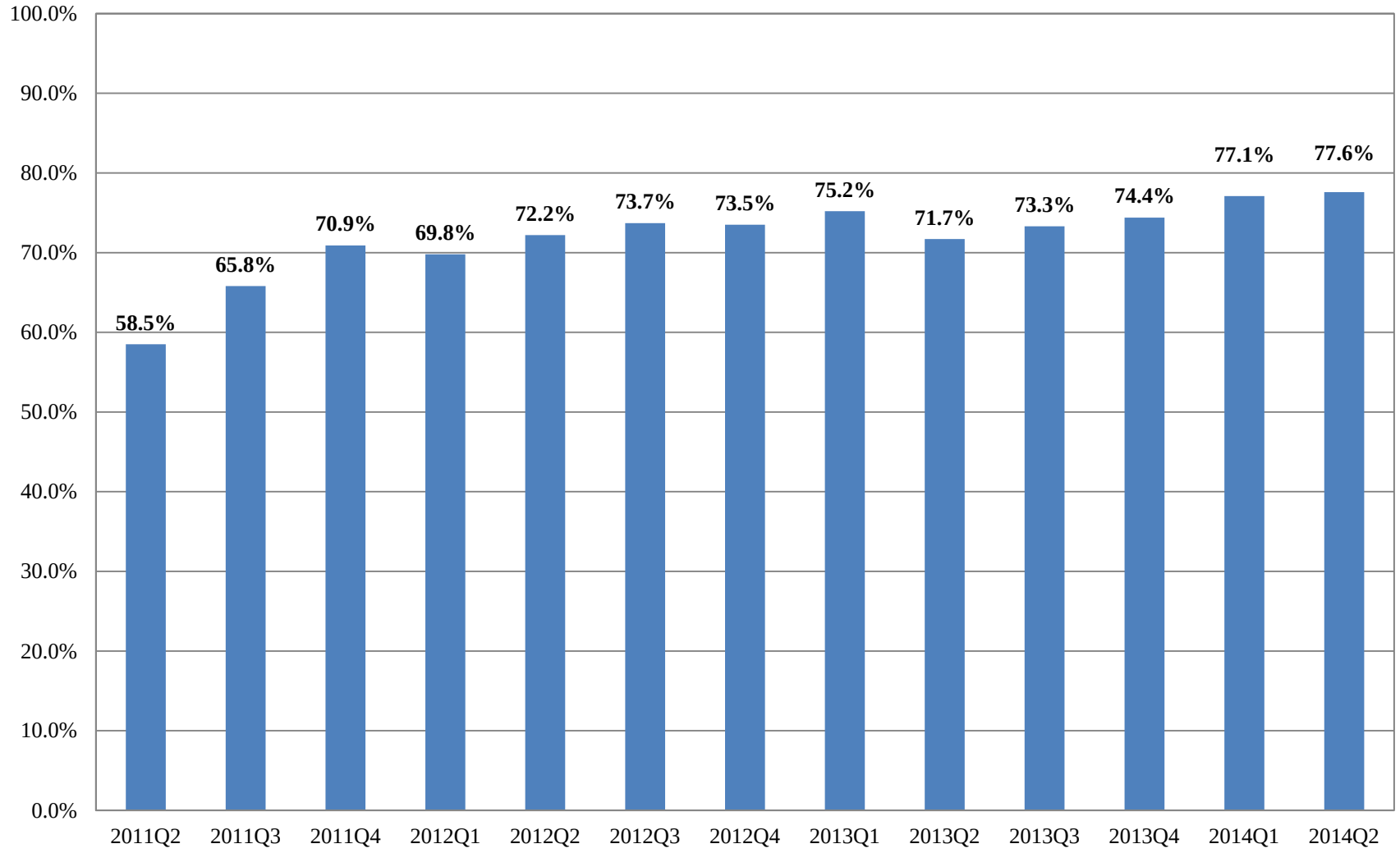

"Streaming" includes: Sound Exchange Distributions, Paid Subscriptions, On-Demand Streaming (Ad-Supported), and Synchronization.
"Total Music Revenue" includes: CD, CD Single, Cassette, Cassette Single, LP/EP, Vinyl Single, Music Video, DVD Audio, SACD, Other Tapes, 8 - Track, Download Single, Download Album, Kiosk, Download Music Video, Ringtones & Ringbacks, SoundExchange Distributions, Paid Subscriptions, On-Demand Streaming (Ad-Supported), and Synchronization.

*Source: Recording Industry Association of America, "Year-End Industry Shipment and Revenue Statistics" (Inflation Adjusted 2013 Dollars (1973 to 2013))*

**SX EX. 011-1-DP**

# Exhibit 4

## Pandora Internet Radio Share Over Time




Pandora defines Internet Radio Share as its "share of internet radio among the top 20 stations and networks in the United States."

*Sources: Pandora Media Inc. Quarterly Metrics, Q4 2013, Q2 2014.*

## Exhibit 5
## Comparison of Subscription Services Pricing

| Service | Price per Month |
|---|---|
| *Interactive* | |
| Rdio Web | $4.99 |
| Sony Music Unlimited Access Plan | $4.99 |
| Rara Web | $4.99 |
| Classical Archives | $7.99 |
| Slacker Premium | $9.99 |
| Xbox Music Pass | $9.99 |
| Rhapsody Premier | $9.99 |
| Spotify | $9.99 |
| Rdio Unlimited[1] | $9.99 |
| Beats[2] | $9.99 |
| Sony Music Unlimited Premium | $9.99 |
| Google Play | $9.99 |
| Rara Premium | $9.99 |
| Guvera | $9.99 |
| Pasito Tunes PC | $14.95 |
| Pasito Tunes Unlimited Mobile | $19.95 |
| **Average** | **$9.86** |
| *Non-Interactive* | |
| MixRadio+ | $3.99 |
| Slacker Radio Plus | $3.99 |
| Musicovery | $4.00 |
| Pandora One[3] | $3.99/$4.99 |
| Rhapsody unRadio | $4.99 |
| Live365[4] | $5.95-$7.95 |
| Sky.fm/Digitally Imported Premium | $7.00 |
| **Average (lowest possible monthly rate)** | **$4.84** |
| **Average (highest possible monthly rate)** | **$5.27** |

| | |
|---|---|
| **Ratio of Average Interactive to Non-Interactive Subscription Prices** | **1.87 - 2.04** |

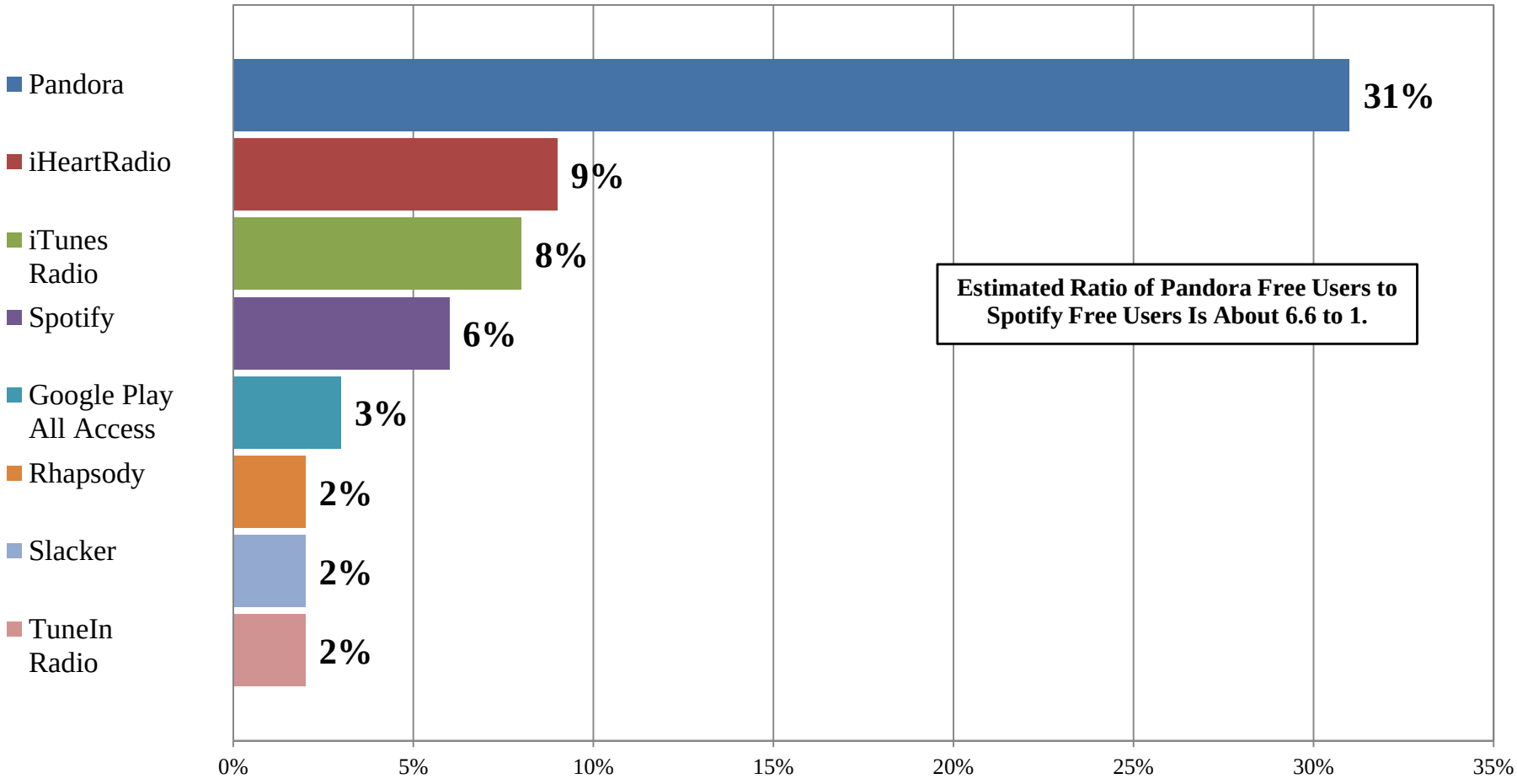
Notes:

1. Rdio Unlimited is also available as a 2 subscription family plan for $17.99 or a 3 subscription family plan for $22.99.
2. Beats' service is available directly through Beats for $9.99 and is also available through AT&T as a 1 person on 3 devices subscription for $9.99 or a 5 people on 10 devices subscription for $14.99.
3. Pandora One is $4.99 per month for new customers and $3.99 per month for legacy customers.
4. Live 365 is $7.95/month for 3 month subscription, $6.95/month for a 6 month subscription or $5.95/month for a 12 month subscription.

*Sources: Rdio Web & Rdio Unlimited, (www.rdio.com/settings/subscription/, accessed August 29, 2014); Sony Music Unlimited Access Plan & Sony Music Unlimited Premium, (http://www.sonyentertainmentnetwork.com/music-unlimited, accessed August 29, 2014); Rara Web & Rara Premium, (https://www.rara.com/, accessed August 29, 2014); Classical Archives, (https://secure.classicalarchives.com/membership/signup.html, accessed September 10, 2014); Slacker Premium & Slacker Radio Plus, (http://www.slacker.com/#guide, accessed August 28, 2014); Xbox, (http://www.xbox.com/en-US/music/music-pass, accessed August 29, 2014); Rhapsody Premier & Rhapsody unRadio, (http://www.rhapsody.com/pricing, accessed August 29, 2014); Spotify, (https://www.spotify.com/us/premium/, accessed August 29, 2014); Beats, (http://www.beatsmusic.com/pricing, accessed August 29, 2014); Google, (https://play.google.com/about/music/allaccess/, accessed August 29, 2014); Guvera, (https://www.guvera.com/settings?tab=account, accessed September 8, 2014); Pasito Tunes PC & Pasito Tunes Unlimited Mobile, (http://www.pasito.com/tunes/help/tuneshelp2_en-US.aspx?&si=pasito, accessed August 29, 2014); MixRadio+, (http://www.mixrad.io/us/en/offer, accessed August 28, 2014); Musicovery, (musicovery.com, accessed August 28, 2014); Pandora, (http://blog.pandora.com/2014/03/18/6128/, accessed August 28, 2014); Live365, (http://www.live365.com/web/components/content/shop/vip.live, accessed August 28, 2014); Sky.fm, (http://www.sky.fm/premium, accessed August 28, 2014.)*

# Exhibit 6

## Percent of Individuals (Age 12+) Who Listened in Last Month




Edison Research conducted a national telephone survey in January and February 2014.
Services with less than 2% of listeners age 12+ not shown.
Ratio of Pandora free users to Spotify free users is based on an estimated 96% of Pandora's active users and 75.0% of Spotify's active users using free services.
Calculation: 31% x 96% = 29.76%; 6% x 75% = 4.5%. Then 29.76% / 4.5% = 6.61 or about 6.6 to 1.

*Source: "The Infinite Dial 2014", Edison Research and Triton Digital, p. 17; Mark Mulligan, "Global Digital Music Services Benchmark - The Digital Music Marketplace," MIDiA Insights & Decisions in Action, September 2014, pp. 10 and 21.*

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# SX EX. 017-DR

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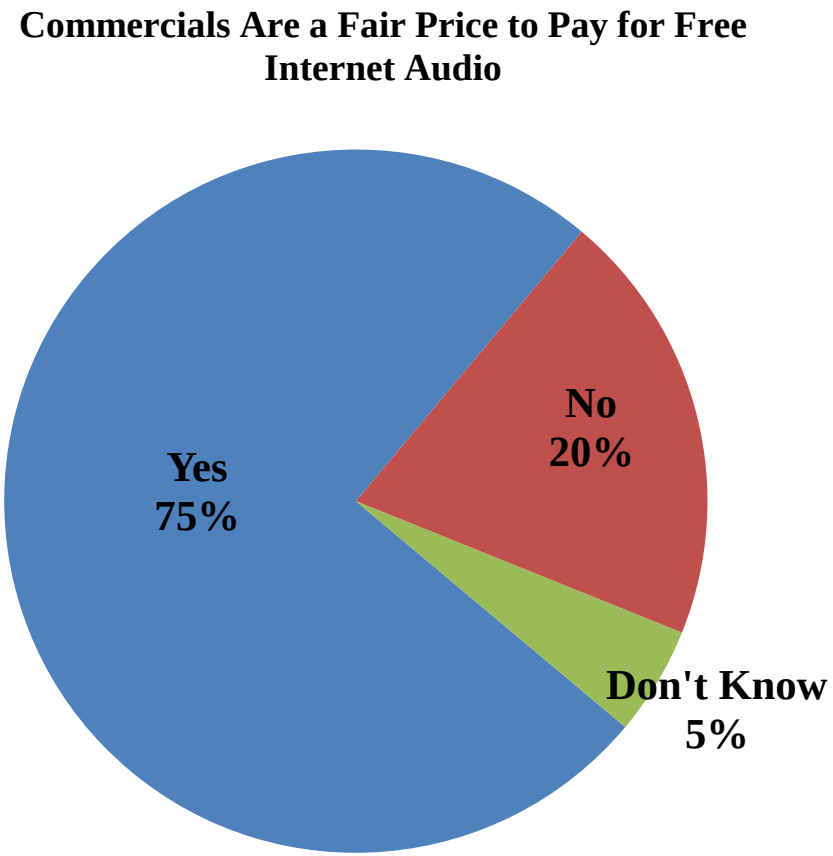
# Exhibit 8

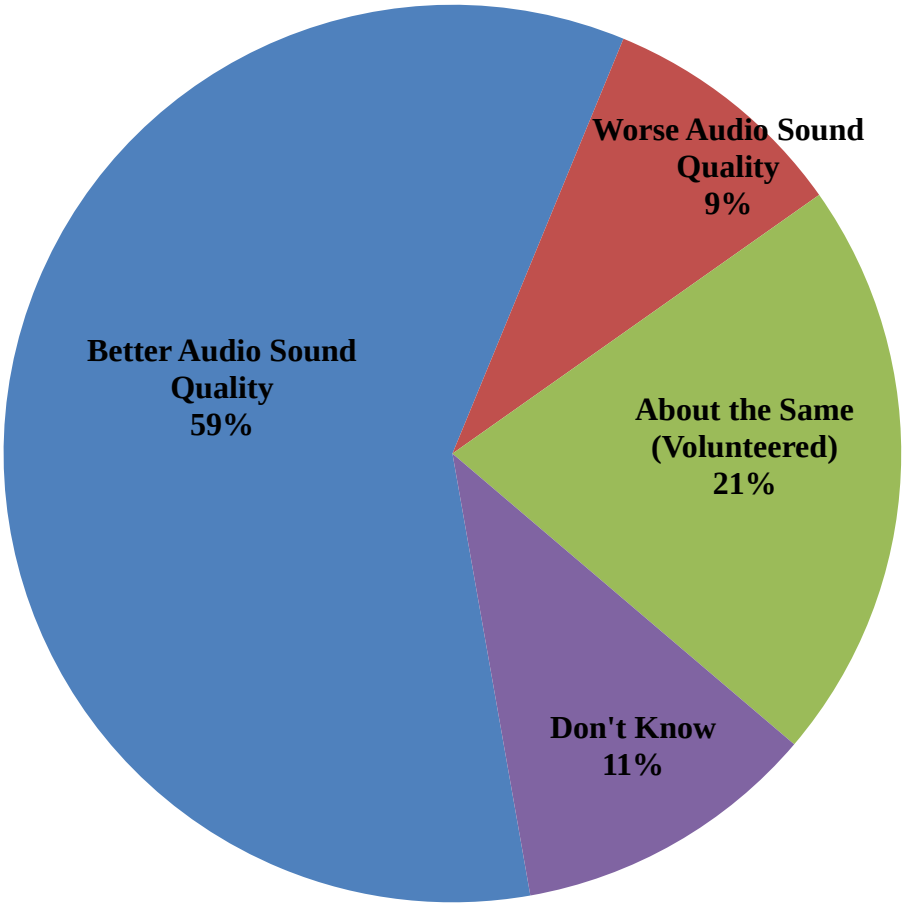



Base: Weekly Online Radio Listeners

*Source: "The Infinite Dial 2014", Edison Research and Triton Digital, p. 12.*

# Exhibit 9

## Listeners Consider Internet Audio Sound Quality Better than AM/FM Radio

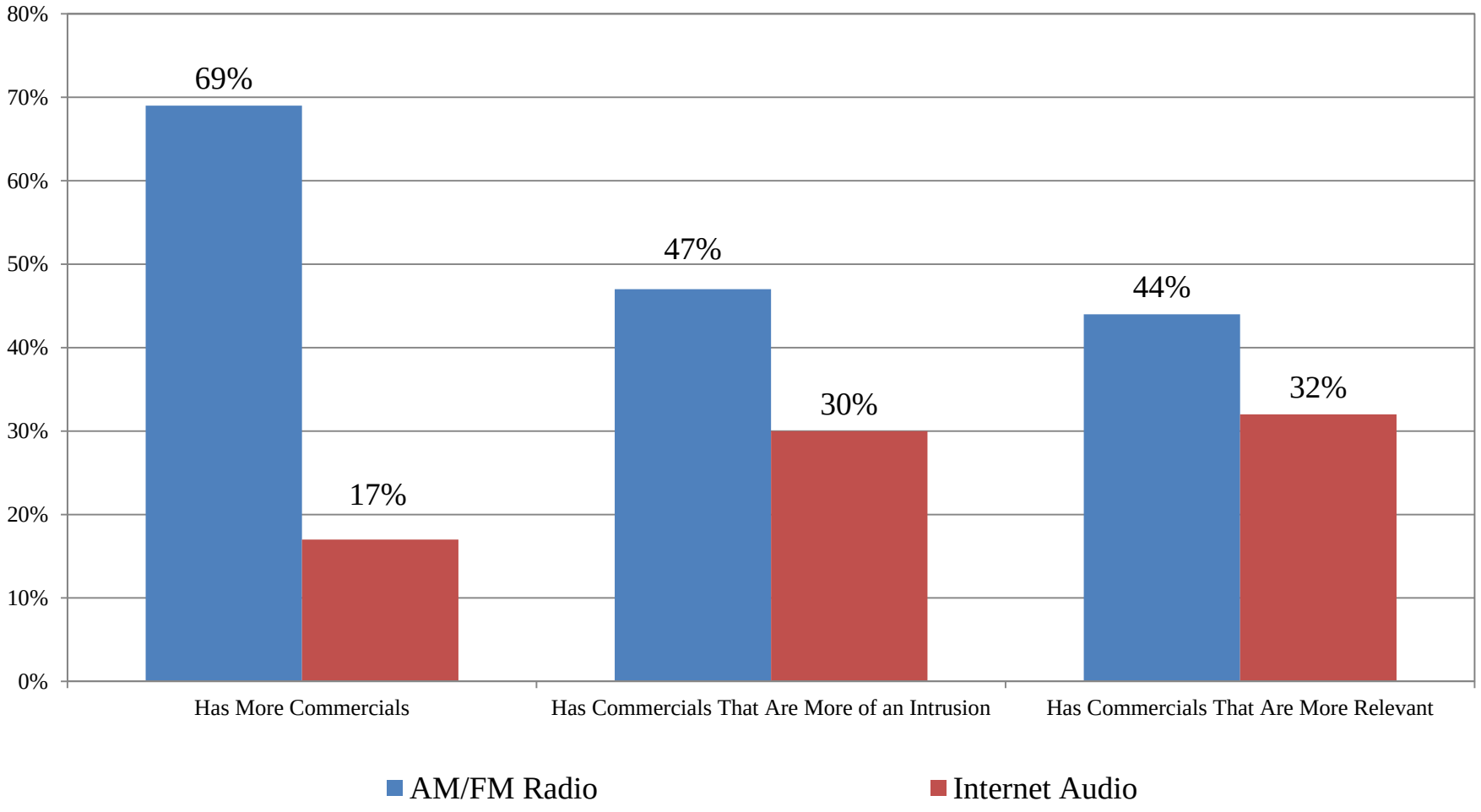



Base: Weekly Online Radio Listeners

*Source: "The Infinite Dial 2014", Edison Research and Triton Digital, p. 13.*

# Exhibit 10

## Internet Audio Commercials Considered Less Plentiful, Less Intrusive, and Less Relevant Than AM/FM Commercials




Base: Weekly Listeners of AM/FM Radio and Online Radio (26% of Total 12+ Population).

*Source: "The Infinite Dial 2014", Edison Research and Triton Digital, p. 14.*

**SX EX. 020-1-DP**

## Exhibit 11
## Number of Webcasters and "Entrants" Paying Royalties Through SoundExchange by Year

| Year | Number of Webcasters | % Change in Webcasters Since 2005 | Number of "Entrants" | "Entrants" as a Percent of Webcasters |
|---|---|---|---|---|
| 2005 | 722 | | | |
| 2006 | 1,403 | 94% | 730 | 52% |
| 2007 | 1,800 | 149% | 571 | 32% |
| 2008 | 1,638 | 127% | 414 | 25% |
| 2009 | 1,890 | 162% | 554 | 29% |
| 2010 | 1,761 | 144% | 407 | 23% |
| 2011 | 2,009 | 178% | 498 | 25% |
| 2012 | 2,271 | 215% | 484 | 21% |
| 2013 | 2,512 | 248% | 580 | 23% |

**Notes:**
For the purposes of this table, if there was more than one subtype for a given company, the company was only counted once.
A webcaster is labeled as "entrant" when no data existed for it in the prior year. A webcaster might "exit" but later "return."

*Source: Internal SoundExchange data.*

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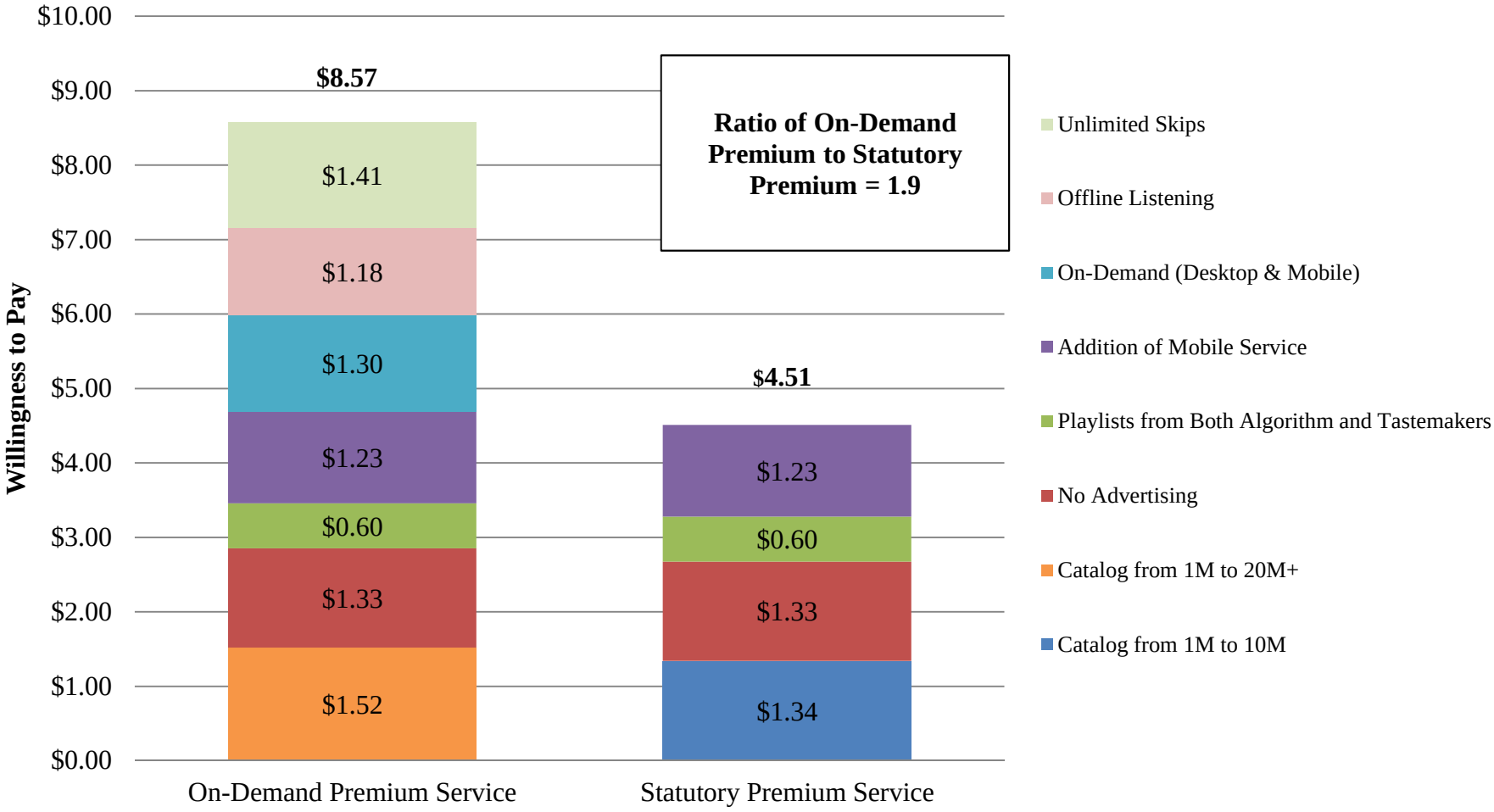
# Exhibit 14

## Analysis of Buyers' Willingness to Pay
## All Respondents, Weighted by U.S. Users (Future)




Statutory Premium Service components do not match total exactly due to rounding.

*Source: McFadden report*

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