Public Version

Before the
UNITED STATES COPYRIGHT ROYALTY JUDGES
Washington, D.C.

In the Matter of: Determination of Royalty Rates and Terms for Transmission of Sound Recordings by Satellite Radio and "Preexisting" Subscription Services (SDARS III)	Docket No. 16-CRB-0001 SR/PSSR (2018-2022)

WRITTEN REBUTTAL TESTIMONY OF

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I. Introduction

I.A. Case Background And Assignment

(1) My name is Thomas Z. Lys. I am the Eric L. Kohler Professor Emeritus at the Kellogg School of Management, Northwestern University, located in Evanston, Illinois. I have been retained by SoundExchange as an expert witness in connection with the above-referenced matter.

(2) I submitted written direct testimony in this matter on October 19, 2016 ("Initial Report"), which contains a complete summary of my qualifications. In that report, I highlight that I have previously submitted expert reports and testified as an expert witness on behalf of SoundExchange in several (related) proceedings before the Judges:

a) 2011-12—*Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services*, Docket No. 2011-1 CRB (*SDARS II*);

b) 2014-15—*Determination of Royalty Rates and Terms For Ephemeral Recording and Digital Performance of Sound Recordings*, Docket No. 14-CRB-001-WR (*Web IV*); and,

c) 2016—*Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services*, Docket No. 2006-1 CRB DSTRA (*SDARS I*, underpayment dispute).

(3) Some of the analyses underlying my opinions were supported by my research staff, working under my direction. All of the opinions expressed in this report are my own independent conclusions. I am compensated at a rate of $1,200 per hour for my work in this matter. My compensation is not dependent on the outcome of this case or on any of the opinions expressed in this matter.

(4) Counsel for SoundExchange has asked me to:

a) Analyze, and if necessary rebut, the reports of Sirius XM witnesses Mr. James Mayer, Ms. Bridget Neville, Mr. Terrence Smith, Mr. George White, Mr. Steven Blatter, Mr. Thomas Barry, Prof. Carl Shapiro, and Mr. Joe Lenski, and specifically:

i. Respond to the statements of Mr. White, and the analysis and conclusions of Prof. Shapiro, regarding Sirius XM's direct licenses with independent labels and their relevance for establishing the SDARS III rates;

ii. Respond to certain other opinions by Prof. Shapiro; and

iii. Respond to assertions made by Prof. Shapiro and Ms. Neville regarding Sirius XM's expected satellite investments.

b) As necessary, update my original analyses in light of recent financial data produced in this matter since the publication of my Initial Report.

I.B. Summary Of Opinions

(5) None of my conclusions in my Initial Report have changed as a result of reviewing new evidence, or the expert reports or fact testimony of the Sirius XM witnesses. To the contrary, the material I have reviewed since my Initial Report has only strengthened my confidence in the conclusions expressed in that report.

(6) Most importantly, none of the arguments made by Prof. Shapiro change my conclusion that the direct license rate does not provide any indication about the market value of the royalty rights, that is the royalty rate that would prevail between a willing buyer and willing seller absent the statutory environment.

(7) Relatedly, Prof. Shapiro's assertion that the statutory royalty rate acts as a magnet pulling up the direct license rate is fundamentally flawed. That assertion is primarily based on Prof. Shapiro's question-begging assumption that the statutory rate is set above the royalty rate that would be negotiated between a willing buyer and willing seller absent the statutory environment.

(8) Prof. Shapiro's argument that Sirius XM deserves special consideration because of upcoming satellite investments is unfounded. [[redacted]]

(9) Finally, I show that the concessions on the 801(b) objectives in the last two royalty rate periods (*SDARS I* and *SDARS II*) cumulatively contributed [[redacted]] to Sirius XM's market capitalization, representing an increase of [[redacted]] over what it would have been without those concessions.

I.C. Report Organization

(10) The remainder of my report is organized as follows:

a) In Section II, I analyze Prof. Shapiro's arguments concerning the relevance of Sirius XM's direct licenses with independent labels, and their implication for the determination of royalty rates in this proceeding;

b) In Section III, I critique Prof. Shapiro's calculations of royalties as a percentage of revenue;

c) In Section IV, I update certain of my analyses from my Initial Report to account for newly obtained information; and

d) In Section V, I rebut Sirius XM's arguments concerning the 801(b) objectives, including the implication of Sirius XM's satellite investment needs for the determination of *SDARS III* royalty rates. In this section, I also quantify the impact of the below-market SDARS royalty rates that Sirius XM has enjoyed in the past.

II. Direct Licenses

(11) In my Initial Report I analyzed Sirius XM's direct licenses with independent labels (or indies). I concluded that, for a number of reasons, those contracts cannot reasonably serve as a basis for determining SDARS royalty rates. My analysis was based on a review of all available documents produced in the record at the time of my Initial Report, as well as additional research I conducted, including telephone interviews with certain independent label executives.

(12) Subsequent to the publication of my Initial Report, I have reviewed all assertions made about indie agreements by Sirius XM's witnesses (most importantly Prof. Shapiro), I have conducted additional interviews with independent label executives, and my team and I have reviewed additional materials (most significantly, over 10,000 negotiation documents produced by Sirius XM).

(13) As I discuss below, Prof. Shapiro's analysis of the direct licenses is fundamentally flawed. Critically, his model does not support his conclusion that the statutory license serves as a magnet pulling directly licensed royalty rates up. Rather, that conclusion results entirely from Prof. Shapiro's arbitrary (and, so far as is evident from his report, empirically unsupported) assumption that the statutory license is set above the rate that a willing buyer and willing seller would otherwise negotiate. Prof. Shapiro could have assumed instead that the statutory license is set *below* the royalty rate that a willing buyer and willing seller would otherwise negotiate. If that assumption were made, then Prof. Shapiro's model would indicate that the presence of the statutory license exerts the opposite effect. Rather than acting as a magnet, pulling rates up, the statutory rate acts as a ceiling, artificially depressing the rates negotiated between Sirius XM and

the indies. As I show below, once one strips away Prof. Shapiro's unfounded exogenous assumption, his analysis is a restricted version of the economic model in my Initial Report.

(14) Prof. Shapiro's assumption that the statutory rate is set above a competitive rate is unfounded. As explained below, to account for the 801(b) factors, the Judges have in the past set the statutory license *below* the rate that a willing buyer and willing seller would have negotiated. Prof. Shapiro's model therefore implies that the statutory rate has acted as a ceiling, artificially limiting the direct license rates. Put differently, absent the statutory rate, the royalty rates in the direct license contracts would have been higher.

(15) Because the statutory rate exerts a distortionary effect on direct license negotiations, the royalty rates in direct licenses are a highly unreliable benchmark. That would be true *even if one were to accept* Prof. Shapiro's unfounded assumption that the statutory rate exerts an upward rather than downward force on directly licensed royalty rates.

(16) In summary, my conclusions have not changed: Both my model and Prof. Shapiro's model show that the independent label agreements do not provide a relevant or reliable benchmark for determining SDARS royalty rates. In the remainder of this section I discuss the specific reasons why the Judges should not rely on the direct license agreements and respond to certain conclusions drawn by Sirius XM's witnesses.

II.A. Critique Of Prof. Shapiro's Model

(17) Both Prof. Shapiro and I agree that the impact of the statutory license must be taken into account when assessing whether the direct license royalty rates are an appropriate benchmark for the market rate.[1] In this section I reconcile the divergent conclusions that Prof. Shapiro and I draw from this shared premise.

(18) In my Initial Report, I show that the royalty rates in the direct license agreements are not informative as to the market value of the underlying royalty rights—the royalty rate to which a willing buyer and a willing seller would agree absent the statutory license.[2] Rather, I show that the statutory rate creates a starting point, from which independent labels and Sirius XM negotiate direct license rates. Moreover, I show that the negotiated direct license rates simply reflect relative negotiation skills and idiosyncratic benefits that are not present in the statutory rate environment (such as an independent label's ability to collect both the label share and artist share).

[1] Written Direct Testimony of Carl Shapiro ("Shapiro WDT"), at 38.

[2] Written Direct Testimony of Thomas S. Lys ("Initial Report"), Section III.

(19) In contrast, in his initial report, Prof. Shapiro argues that the royalty rates in Sirius XM's direct licenses serve as an appropriate benchmark for the underlying market value of the royalty rights.[3] In the sections that follow, I analyze Prof. Shapiro's model, laid out in Appendix E of his report. This model purports to "analyze in detail the relationship between the direct license rates and the statutory rates."[4] According to Prof. Shapiro, this model demonstrates that "the statutory rate serves as a *magnet*, pulling the direct-license rate up, above the competitive level, toward the statutory rate."[5] As I demonstrate, Prof. Shapiro's "magnet" conclusion does not follow from his model. Rather, his conclusion is based solely on the arbitrary and unfounded assumption that the statutory rate is set above the market rate. That assumption is question-begging, and it renders his model useless, as the model's entire purpose is to establish the market rate in the first place. In fact, that assumption makes the model superfluous, as it simply delivers what must be in Sirius XM's interest—a lower statutory royalty rate.

(20) Next, I explain how, once the arbitrary assumption that the statutory rate is set above the market rate is removed, Prof. Shapiro's model results in the same conclusion I draw in my Initial Report. The direct license royalty rates are unrelated to the underlying market value of the royalty rights. Therefore, they are not an appropriate benchmark.

II.A.1. Prof. Shapiro's Model Is Incomplete

(21) Prof. Shapiro presupposes that there is only one benefit to a label signing a direct license at a royalty rate lower than the statutory rate. According to Prof. Shapiro, this sole benefit is "steering," which he describes as "better access to programmers and more opportunities to promote new recordings."[6] It is on this basis that Prof. Shapiro models the relationship between the direct license rates and the statutory royalty rate.

(22) Indeed, were it not for the supposed benefit of "steering," Prof. Shapiro concedes that the direct licenses would not be relevant at all to the Judges in determining the market rate. When asked about independent labels who might have entered into direct licenses for reasons *other* than steering, Prof. Shapiro responded, [[redacted]][7] Prof. Shapiro further acknowledged that, [[redacted]

3 Shapiro WDT, Section 9.

4 Shapiro WDT, at 44.

5 Shapiro WDT, at 45.

6 Shapiro WDT, at E-1.

7 SoundExchange Ex. 73, Shapiro Dep. 120:13-16.

[redacted]][8]

(23) As noted above, I have reviewed a voluminous amount of negotiation history between Sirius XM and independent labels, and I have spoken with multiple independent label executives. Having done so, I am confident that Prof. Shapiro fundamentally erred in assuming that "steering" is the exclusive reason (or even an important reason) that directly licensed labels accept a royalty rate lower than the statutory rate.

(24) I explain the basis for that conclusion in detail, in Part II.C below. For now, suffice it to say that Sirius XM's pitches and presentations to independent labels alone flatly contradict Prof. Shapiro's assumption. Consider one illustrative pitch, an email from Sirius XM to directly-licensed label [[redacted]]. In this pitch, Sirius XM represented that, under the proposed agreement, [[redacted]][9] Sirius XM further represented that [[redacted]"][10] And Sirius XM went on to represent that, [[redacted]][11]

(25) These three reasons for entering a direct license—avoidance of administrative deductions, recovery of the artist share, and reduced administrative burden through consolidation of licenses—have nothing whatsoever to do with "steering." Furthermore, as I will show, these reasons are in addition to multiple, equally compelling reasons that many labels entered direct deals with Sirius XM—including royalty payments for pre-72 recordings, payment of an advance, and an increase in royalties due to a phenomenon I have called "over-indexing." Taken together, these various benefits (detailed below) far exceed the value of any hypothetical steering. Indeed, as I show below, these benefits can effectively double the nominal royalty rate provided to directly licensed labels.

(26) Though I have seen scant evidence to this effect, I acknowledge that some labels may have gained additional access to Sirius XM's programming staff because they signed a direct license. However, such access falls short of what, from an economic perspective, can rightly be

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8 *Id.* at 120:17-121:1.

9 SoundExchange Ex. 74, [[redacted]].

10 *Id.*

11 *Id.*

considered "steering." In the Merlin-Pandora agreement considered by the Judges in *Web IV*, Merlin offered lower rates *only if* it received a corresponding increase in the number of plays. That is, under the Merlin-Pandora agreement, Merlin received a contractually binding commitment that it would not be paid at lower rates unless and until it received a more than offsetting increase in volume. By contrast, [[redacted]] Sirius XM's soft form of "steering" has come instead in the form of vague suggestions of an improved relationship with programming staff, and a purportedly easier channel through which to present new content. But, as I will again show below, [[redacted]]

(27) Because directly licensed labels take a discount from the statutory rate for a bevy of reasons unrelated to steering, and because (as described below) I have seen no evidence of steering, direct licenses are—by Prof. Shapiro's own admission—simply not [[redacted]] for the purpose of determining a reasonable rate in a workably competitive market.[12]

II.A.2. Prof. Shapiro Draws Conclusions That Do Not Follow From His Model

(28) Notwithstanding the incompleteness of the model discussed above, Professor Shapiro uses it as a basis to jump to the conclusion that the statutory rate pulls the direct license rate up above the competitive level. But that logic assumes the conclusion in question—that "the statutory rate is set above the competitive level."[13] The model nowhere explains that assumption and, as far as I can tell, the assumption is purely arbitrary. As I said above, that assumption alone renders the model superfluous.

(29) Prof. Shapiro's assumption that the statutory rate has been set above the competitive rate could just as well be replaced by the opposite assumption—that the statutory rate has been set *below* the competitive rate. Indeed, that latter assumption is more likely to be correct. In the *SDARS I* proceedings, the Judges determined that the most likely market-place royalty rate was $1.40 per subscriber (which they then translated into a percentage of revenue rate of 13%, "the upper boundary most strongly indicated by marketplace data").[14] However, the Judges set the statutory rate lower, to account for the 801(b) factors. Simply adjusting the *SDARS I* market-based rate for inflation results in a present-day royalty rate above 15%. That means the 2017 statutory rate of

[12] SoundExchange Ex. 73, Shapiro Dep. 120:13-16.

[13] Shapiro WDT, at E-1.

[14] *SDARS I*, at 4097.

11% is at least four percentage points below the inflation-adjusted market royalty rate established in *SDARS I*.

II.A.3. Prof. Shapiro's Model Shows That Direct License Royalty Rates Are Unrelated To The Underlying Market Value Of The Royalty Rights

(30) If one correctly disregards Prof. Shapiro's exogenous assumption that the statutory rate is set above the competitive level, then there is only one, limited conclusion that can be drawn from Prof. Shapiro's model. The directly licensed royalty rate co-moves with the statutory rate, because the statutory license creates an alternative to any negotiated agreement. This is, in fact, what I conclude based on the model I present in my Initial Report. Having observed the pattern of royalty rates in direct license agreements, I agree that these increase over time along with the statutory rate.[15]

(31) Importantly, the direct license rate travels with the statutory rate regardless of whether the statutory rate is less than, equal to, or higher than the competitive rate. In other words, the direct license rate travels with the statutory rate, *not* with the underlying market value of the royalty rights. [16] There is only one conclusion to be drawn from this lack of relationship—the direct license royalty rates are not an appropriate benchmark for the underlying value of royalty rights.

(32) As I have noted above, if one were to inflation-adjust the competitive rate noted by the Judges in *SDARS I*, then it is clear that the statutory rate underrepresents the value of royalty rights. Proceeding from this basis, it is clear that the statutory rate acts as a *ceiling* to direct license royalty rates—not as a magnet pulling those rates up. When entering negotiations with an independent label, Sirius XM would have no economic incentive to ever pay a royalty rate higher than the statutory rate (and, in fact, it never has). Some independent labels have chosen to accept a royalty rate lower than the statutory rate in exchange for certain additional benefits. But in this scenario, the true competitive rate is irrelevant to both negotiating parties. Whether it is one percentage point higher than the statutory rate or twenty percentage points higher than the statutory rate does not matter. There is no possibility of the independent label achieving a rate higher than the legally-mandated statutory rate.

(33) In conclusion, because direct licenses have been negotiated and signed in the shadow of the statutory rate, which exerts a profound distortionary effect on those negotiations, direct licenses are entirely uninformative for purposes of establishing a market-based benchmark.

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[15] Initial Report, at 95-96.

[16] Initial Report, Section III.

II.B. Critique Of The Direct License Benchmark

(34) Prof. Shapiro's analysis is predicated on the existence of what he considers a sizable set of direct deals between Sirius XM and independent labels. As I show below, however, the actual number of these deals is overstated. Moreover, regardless of the number, most of the direct deals are economically irrelevant by any reasonable standard because the licensors receive [[redacted]] and their works are [[redacted]]. In reality, just [[redacted]] It is therefore appropriate to focus on these thirty labels and the reasons they signed direct licenses.

II.B.1.a. Number Of Direct Licenses

(35) There are a number of ways to quantify the magnitude of Sirius XM's directly licensed activity. One could consider the number of catalogs under license. (Any given licensed label may represent more than one catalog.) One could also simply count the number of labels that have signed deals. One could also consider the percentage of tracks performed or played on Sirius XM's service that are owned by directly licensed labels. Or one could consider the relative "weight" of the various licenses, by for instance subtracting those licenses that have never been paid royalties (and which are, therefore, economically irrelevant). Under any of these approaches, my analysis indicates that Sirius XM has overstated the magnitude of its direct license activities.

(36) First, Sirius XM has overstated the number of catalogs under license. Sirius XM's Senior Vice President of Music Licensing, George White, testified that the number of Sirius XM's direct licenses cover "more than 23,000 catalogs and five million tracks."[17] At the time Mr. White submitted testimony, The Orchard was a direct licensor of Sirius XM. According to Mr. White, The Orchard is a significant distributor of other independent labels and their catalogs, and its direct deal granted Sirius XM access to approximately [[redacted]] catalogs.[18] Since Mr. White submitted his testimony, however, [[redacted]].[19] [[redacted]].

(37) Second, Prof. Shapiro appears to have overrepresented the number of deals in place as of the time he submitted his written direct testimony. As seen in Figure 1, Prof. Shapiro represented that Sirius XM has deals with "498 individual record labels."[20]

[17] Written Direct Testimony of George White ("White WDT"), ¶5.

[18] SoundExchange Ex. 75, White Dep. 35:21-36: 11.

[19] *See id.* at 44:5-7 [[redacted]].

[20] Shapiro WDT, at 4. Prof. Shapiro's representation was made in apparent reliance on Mr. White's testimony. *See* Shapiro WDT, at 30 n.42, 35 n.48; *see also* White WDT, ¶¶ 5, 10.

Figure 1: Prof. Shapiro's Table 1

Table 1: Sirius XM Average Contract Royalty Rate

Direct Licenses, 2011-2016 (rates as of September 1, contracts weighted by plays, market share, or royalty revenue)

	2011	2012	2013	2014	2015	Current
Average Weighted Royalty Rate	6.42%	6.75%	6.79%	7.07%	8.07%	9.42%
Number of Contracts	25	96	108	133	207	498

Sources:

[1] Sirius XM Negotiation Status Report

[2] SDAR Play Count Consumption - 2015.xlsx

[3] DL contracts summary.xlsx

[4] George White Written Direct Testimony

Source: Shapiro WDT, Table 1. Emphasis added.

(38) However, the underlying data used by Prof. Shapiro indicates that, contrary to his report, there are only [[redacted]] "current" contracts, as seen in Figure 2.

Figure 2: Screenshot of the output of Prof. Shapiro's analysis generating his Table 1 [RESTRICTED]

[redacted]

(39) It is likely that the discrepancy between these numbers can be attributed to Sirius XM's "opt-in" direct license campaign, which was run by its contractor Music Reports, Inc. ("MRI").[21] Based on my review of documents, [[redacted]][22] It appears that as of the time of Mr. White's written direct testimony, [[redacted]], and all of these labels

[21] Since 2011, MRI has acted as Sirius XM's agent in procuring new licenses and administering payment to direct licensors. *See* White WDT at 1; SoundExchange Ex. 75, White Dep. 15:19-16:8. Currently, Sirius XM pays MRI approximately [[redacted]] a month for its services. SoundExchange Ex. 75, White Dep. 17:7-8.

[22] SoundExchange Ex. 76, [[redacted]].

signed up after [redacted][23] For reasons that I discuss below, these licenses are economically irrelevant. There is currently no data indicating that these labels have generated any royalties, nor is there any reason to think they will generate royalties of any significance going forward.

(40) In addition to tallying catalogs and signed agreements, there is a third approach to quantifying direct license activities. This approach considers the percentage of tracks spun or performed by Sirius XM that are licensed by indies under a direct deal. Mr. White testified (and Prof. Shapiro reiterated) that "[i]n the most recent reporting period, directly-licensed tracks accounted for approximately 6.4% of our monthly spins, more than twice the percentage covered by direct license at the time of the SDARS II proceeding."[24]

(41) Under this approach, too, Sirius XM has overstated the size of its direct license campaign. The Judges have made clear in the recent underpayment decision that it is "unreasonable" to estimate the proportion of satellite listeners using "plays on Sirius XM's satellite radio channels … not weighted by listenership."[25] The Judges specifically held that this method is not a "rational way" to "determine with any reasonable accuracy the volume or value of those performances." Accordingly, rather than looking to the percentage of "spins" that are directly licensed, it is more reasonable to look to the percentage of "performances, *i.e.*, satellite listeners" that are directly licensed. This can be done by relying on data from internet simulcasts.

(42) The most recent information I was able to identify among the produced Sirius XM materials indicates that in August 2016 (the latest period for which data is shown) directly licensed tracks accounted for [redacted] of total performances.[26] (By contrast, for this same month, [redacted] of plays were directly licensed tracks.)

(43) Furthermore, it is unhelpful to choose a single month data-point to assess the relative percentage of performances that are directly licensed. Doing so cannot be viewed as representative sampling and risks overstating a one-time blip. As it turns out, August 2016 is sharply higher than the previous month's level of directly licensed performances—which was [redacted]. Looking at the most recent 12 months, which is a more commonly-accepted "reporting period," Sirius XM's documents indicate that direct licenses accounted for only [redacted] of SDARS performances.

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23 SoundExchange Ex. 77, [redacted].

24 White WDT, ¶5; Shapiro WDT, at 35.

25 *In re Determination of Rates and Terms for Preexisting Subscription Services and Satellite Digital Audio Radio Services*, Ruling on Regulatory Interpretation Referred by United States District Court for the District of Columbia, No. 2006-1 CRB DSTRA, at 16 (Jan. 10, 2017).

26 SoundExchange Ex. 78, at tab "graphs," cell V10.

II.B.1.b. Most Of The Direct Licenses Are Economically Insignificant And Likely Were Obtained By Sirius XM For Litigation Purposes

(44) Whatever the number of Sirius XM's direct agreements, [[redacted]][27] The definition of "active" is not provided in the file. The term appears to refer to the number of unique labels that earned any royalties in a particular time period. The remainder are either "inactive"—meaning they have generated zero royalties over the same time period—or are among the newly-minted "opt-in" licenses for which there is no evidence in the record of any royalties earned or expected.

(45) [[redacted]] As Figure 3 indicates, the proportion of inactive agreements has [[redacted]] since Q4-2013 (the first available data-point), rising from [[redacted]] in the most recent quarter (Q3-2016).

[27] *Id.* at tab "payments," cell Y533.

Figure 3: Growth in the percentage of inactive agreements[28] [RESTRICTED]

[redacted]

[redacted] Furthermore, [[redacted]] of Sirius XM's direct deals were entered into within five weeks of Sirius XM's written direct submission in this proceeding.[29] That timing suggests that the campaign was entered into with an eye towards this ratemaking proceeding—specifically for the purpose of inflating the number of Sirius XM's direct licensors. Indeed, Mr. White acknowledged that [[redacted]][30] Internal documents at Sirius XM appear to confirm this interpretation. For instance, [[redacted]

[redacted]

[28] The source document provides quarterly data between Q4-2013 and Q1-2015 and monthly data thereafter. I select the final month of each quarter to represent the % of inactive contracts for the quarter. For the final data-point, Q3-2016, I use data from the most recent month available, August 2016.

[29] SoundExchange Ex. 77; *see* SoundExchange Ex. 75, White Dep. 131:2-132:5.

[30] SoundExchange Ex. 75, White Dep. 20:7-19.

[redacted][31]

The litigation motive is further confirmed by internal Sirius XM correspondence revealing that [redacted][32] and referring to the strategy of [redacted][33]

(47) Regardless of the motivations, the inactive licenses are profoundly uninformative, as there is no data suggesting they will ever generate royalties. With respect to the opt-in licenses, Sirius XM did not anticipate that these labels' catalogs were valuable enough to justify personalized outreach, let alone negotiations over deal points. Indeed, Sirius XM indiscriminately sent its opt-in blast email to over [redacted] labels.[34] I have seen no record evidence indicating that Sirius XM's programmers intend to play the recordings of the roughly [redacted] of labels that accepted the form offer, simply because they did so. Thus, while Prof. Shapiro has observed that "Sirius XM has now entered into direct licenses with 498 record labels, about five times as many as in the SDARS II proceeding,"[35] the gross number of agreements is utterly irrelevant when so many of them are simply electronic forms that do not represent any economic activity.

(48) Even within the small group of [redacted] "active" licenses for which some royalties have at some point been paid, royalty payouts are concentrated at the top. [redacted][38]

(49) In order to control for the possibility that August 2016 was an anomalous month, I also analyzed the same data over a longer time period, the most recent 12 months (between September 2015 and August 2016). When doing so I found an equally pronounced concentration of royalties. During this time period, the Top 5 labels earned more than [redacted] of royalties, and the Top 30 labels collectively earned [redacted] of royalties. This breakdown is summarized in Figure 4.

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31 SoundExchange Ex. 79, [redacted], at SXM_DIR_00092128.

32 SoundExchange Ex. 80, at SXM_DIR_00095873.

33 SoundExchange Ex. 81, at SXM_DIR_00089888.

34 SoundExchange Ex. 75, White Dep. 133:4-19 [redacted].

35 Shapiro WDT, at 45.

36 Shapiro WDT, at 35; White WDT, ¶5.

37 SoundExchange Ex. 78, tab "payments," cells Y537-539.

38 *Id.*

Figure 4: Summary of average monthly royalties earned by indie labels, by tier, over the most recent 12 months of available data [RESTRICTED]

[redacted]

(50) The data is displayed in graphical form in Figure 5 , which shows that [[redacted]]

39 Over the most recent 12-month period between September 2015 and August 2016; only months with values are averaged.

Figure 5: Sirius XM direct license royalty payments by indie, from highest to lowest paid, over the most recent 12 months of available data [RESTRICTED]

[redacted]

(51) Sirius XM has consistently paid [[redacted]] of its direct license royalties to about 30 independent labels—which going forward I will refer to as the "Top 30." Because [[redacted]], it is appropriate to focus on this subset in order to understand the dynamics of direct license negotiations. Figure 6 presents the Top 30 labels and their individual and cumulative contribution of average total monthly royalties.

Figure 6: Concentration of average monthly directly-licensed royalties among the top 30 labels [RESTRICTED]

[redacted]

40 Over the most recent 12-month period between September 2015 and August 2016; only months with values are averaged.

(52) In the section that follows I analyze the reasons why these Top 30 labels entered into direct deals—based on an extensive review of negotiation history provided by Sirius XM. I conclude based on this review that "steering" was only a marginal factor, if it was a factor at all, in these 30 labels' decisions to license directly with Sirius XM. Note that, because all of the remaining direct licensors combined account for only [[redacted]] of royalties paid out, even if *all* of these labels were induced to sign up *only* because of steering, that factor would still account for only [[redacted]] of the economics behind direct licenses. Of course, I have no reason to think those assumptions would hold true, and my investigation of the Top 30 licensors strongly indicates otherwise.

II.C. Why Independent Labels Enter Into Direct Licenses With Sirius XM

(53) From an economic perspective, it is self-evident that indies enter into direct licensing agreements with lowered royalty rates—which are seemingly less than they would receive by simply "doing nothing" and receiving the statutory royalty rate—because the direct license provides them with benefits that at least offset that lower rate. As Prof. Shapiro put it, "[u]ltimately, the critical issue in evaluating these direct license benchmark agreements is understanding *why* the rates set in these direct licenses are lower than the statutory rates that would otherwise apply."[41] Prof. Shapiro also acknowledged that [[redacted]][42] I agree.

(54) Prof. Shapiro maintains that the singular benefit motivating the direct licenses was steering.[43] He makes this assertion, however, without reviewing *any* of the negotiating documents between Sirius XM and directly licensed independent labels, and without talking to *any* of those labels.[44] As such, his claim is an assertion, not a conclusion. In contrast, a careful investigation of the facts would have revealed to Prof. Shapiro that steering played little if any role in the direct licenses. There is no evidence that Sirius XM ever made direct trade-offs between the price of sound recordings and the frequency of plays—let alone that it engaged in a contractually binding form of steering, as was the case in the Merlin-Pandora agreement considered by the Judges in *Web IV*.

(55) Of course, this presents the question why independent labels would sign direct licenses at a rate less than the statutory rate. Below, I show that a variety of other sizable benefits not available under the statutory scheme explain the direct licenses. These benefits alone provide sufficient inducements, even absent steering, for labels to enter into direct licenses at rates lower than the

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41 Shapiro WDT, at 38.

42 SoundExchange Ex. 73, Shapiro Dep. 120:13-16.

43 Shapiro WDT, at 40-44

44 SoundExchange Ex. 73, Shapiro Dep. 114:12-15, 23-24 ([[redacted]]); 109:23-25 [[redacted]].

statutory rate. As such, they prove the obvious fact that, at any given statutory license rate, record companies will trade a discount off that rate in return for benefits that equal or more than offset the discount. Given this dynamic, in which the statutory rate casts a long shadow, directly licensed rates are not indicative of royalty rates that willing buyers and willing sellers would agree to in a competitive, free-market environment.

(56) In the subsections that follow, I explain the various benefits offered to directly licensed independent labels, focusing on the Top 30.

II.C.1. SoundExchange Administrative Fee

(57) Under the current statutory mechanism, labels receive payments from SoundExchange only after deducting SoundExchange's administrative fees. In 2015, those fees were set at 4.6% of royalties.[45] In other words, if Sirius XM paid out $100 in royalties earmarked for a label, the maximum a label could possibly receive from SoundExchange is $95.40 (though, in reality, labels receive much less, because 50% of SoundExchange's disbursements are paid to artists and unions). By contrast, when a label signs a direct license with Sirius XM, there is no off-the-top deduction for administrative fees.

(58) Sirius XM has been explicit in pitching avoidance of the SoundExchange administrative fee.[46] Consider, for instance, Sirius XM's acknowledgment in one email to a label:

> [[redacted]][47]

(59) Consider also the Top 30 direct licensor [[redacted]]. Sirius XM initially solicited this label on January 30, 2014.. When doing so, it noted that [[redacted]][48] Sirius XM further noted that its [[redacted]] royalty rate [[redacted]] due in part [[redacted]][49] When [[redacted]] pushed back on this offer—observing that it [[redacted]]

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45 Shapiro WDT, at 42.

46 See Appendix A, Figure 67 for a full listing of the Top 30 labels that were pitched in this manner.

47 SoundExchange Ex. 82, [[redacted]], at SXM_DIR_00033692.

48 SoundExchange Ex. 83, [[redacted]], at SXM_DIR_00037545.

49 *Id.*

[redacted]—Sirius XM again promoted the advantage of avoiding the SoundExchange administrative fee. Sirius XM urged the label to [redacted][50] Shortly after receiving this email, [redacted] signed its direct license.[51]

(60) Regardless of whether Sirius XM explicitly pitched the benefit of avoiding the SoundExchange administrative fee, every direct licensed label obtained this benefit.

(61) Prof. Shapiro correctly recognizes that, for labels entering into a direct license, earning back the SoundExchange administrative fee offsets almost half of the average direct license discount below the statutory rate. Prof. Shapiro observes that approximately half the delta between a 9.5% direct license royalty rate and a 10.5% statutory rate can be attributed to the administrative fee alone: [redacted][52]

(62) To illustrate this point further, I compare average direct license contract royalty rates over time, as reported by Prof. Shapiro. In Figure 7, I show the effective direct license royalty rates trued up for the impact of not having to be subject to SoundExchange's administrative expenses of 4.6%.

Figure 7: Effective average contract royalty rates under Sirius XM direct licenses, adjusted only for SoundExchange expenses

		2011	2012	2013	2014	2015	Current[53]
A	Average contract royalty rate	6.42%	6.75%	6.79%	7.07%	8.07%	9.42%
B=A/(1-4.6%)	Effective average contract royalty rate grossed up for SoundExchange average overhead deduction of 4.6%	6.73%	7.08%	7.12%	7.41%	8.46%	9.87%

Source: Lys analysis, Shapiro WDT Table 1.

(63) In the table above, the royalty rates in row B represent the effective direct license rates, adjusting just for the SoundExchange administrative expenses. Figure 8 (below) shows that the gap between effective direct license rates and the statutory rates has been tightening over time and was only 63 basis points (6% in relative terms) in 2016.

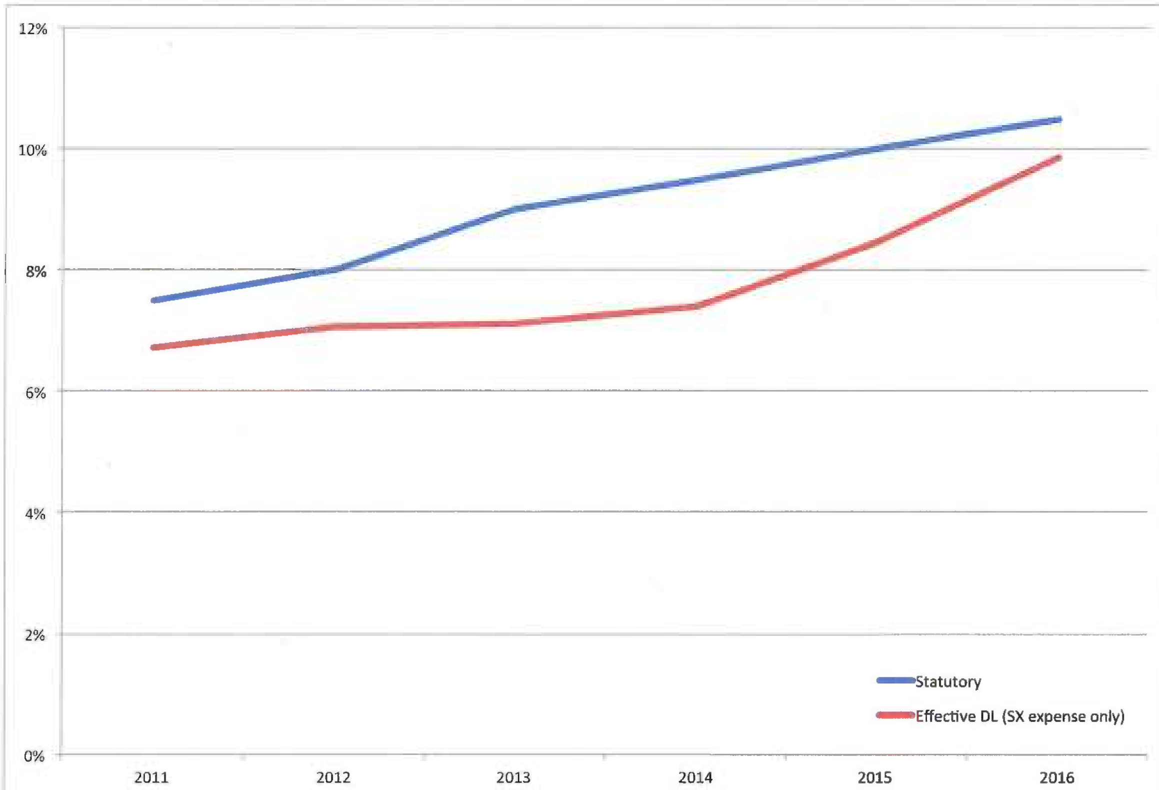
50 *Id.* at SXM_DIR_00037539 [redacted]; *id.* at SXM_DIR_00037536 [redacted].

51 SoundExchange Ex. 84, [redacted].

52 SoundExchange Ex. 73, Shapiro Dep. 121:12-21.

53 2016; "current" as of the Shapiro WDT.

Figure 8: Gap between effective direct license and statutory SDARS royalty rates



Source: Lys analysis.

II.C.2. Artist Share

(64) Under the current statutory mechanism, labels receive payments from SoundExchange not only after SoundExchange's administrative fees are deducted, but also according to a statutorily-required split with artists. The "featured" artist receives 45% of the royalties, while an additional 5% is distributed to a fund for "non-featured" artists (backup musicians and session players). The label receives the remaining 50%. By signing a direct license with Sirius XM, a label avoids this "50/50" split. Instead, the label receives the full amount of royalties owed by Sirius XM, and it is left to the label to disburse payments to its artists under the individually negotiated terms of the label/artist contracts. Sirius XM actively promoted this feature of its direct licenses when soliciting labels for direct licenses, including labels within the Top 30.[54] An illustrative example comes from an email promoting a direct license to [[redacted]], a Top 30 label:

[54] For a list of the Top 30 labels to whom Sirius XM promoted receiving the artist share, see Appendix A, Figure 65. I also observed Sirius XM promoting paying out the artists' share in my limited review of its negotiating documents with labels outside of the Top 30. *See* Appendix A, Figure 66. This included the promotion of a direct license to [[redacted]]. *See* George White WDT, Attach. A.

[redacted][55]

(65) Obtaining the artist share through a direct license offers a number of benefits to a label. First, avoiding the statutory 50/50 artist split will be beneficial to labels whose contracts allow them to recoup advances, recording costs, marketing expenses, and similar costs incurred to create and promote their artists' sound recordings, before distributing any royalties to the artists. Receiving the artist share presents two kinds of economic advantages to labels whose artist contracts permit recoupment. If the artists eventually recoup, then the label has been able to earn that recoupment faster than it could under the statutory license (beneficial because of the time-value of money). If those artists *never* recoup, then the artist share represents revenue that the label would simply never realize under the statutory license. I spoke to an executive at [[redacted]], a Top 30 licensor, who explained that this was the main reason his label entered into a deal with Sirius XM. This executive told me that [[redacted]]. The executive explained that, under the statutory license, SoundExchange [[redacted]] By contrast, through a direct license, [[redacted]] I have also reviewed testimony from [[redacted]], who made essentially the same point during the *SDARS II* proceeding. [[redacted]

(66) Second, a label's artist contracts may provide for a split of royalties lower than the statutory 50/50. According to Prof. Shapiro, RIAA data indicates that artists tend to receive [redacted]] of royalties under their contracts with labels.[57] [[redacted]

55 SoundExchange Ex. 83, [[redacted]], at SXM_DIR_00037545.

56 Written Rebuttal Testimony of [[redacted]], *SDARS II*, at 5. [[redacted]]

57 Shapiro Testimony, *Web IV*, Tr. 4642.

[redacted] Finally, an artist contract for one Top 30 licensor was recently disclosed publicly, in litigation related to the licensor's direct deal with Sirius XM. This contract gives the artist a 25% share of royalties earned through digital performances (including performances on Sirius XM).[59]

(67) In some cases the label may not be required to share *any* royalties with its artists—specifically, labels that create sound recordings using musicians on a "works for hire" basis. In such circumstances, the artist is paid a one-time flat fee in exchange for the sound recording and is entitled to no further royalty stream from the label. [[redacted]]

(68) As long as a label has at least *one* contract with an artist that provides for a less than 50/50 split, the label would stand to benefit under a direct license, relative to the statutory license. Depending on the terms of a label's contracts with artists, these savings could be significant and could more than offset the delta between a contractual royalty rate and the statutory rate. To illustrate this point, I have calculated the effective direct license royalty rate under different label/artist royalty splits, as reflected in Figure 9. These splits include [[redacted]] (as cited by Prof. Shapiro) and [[redacted]] (the split achieved by Naxos). The first two rows in this table display the statutory rate for various years, as well as the face value royalty rate of direct licenses, according to Prof. Shapiro.[60] The rows that follow represent the *effective* direct license royalty rates, taking into account various artist/royalty splits and an adjustment for the SoundExchange administrative expense.

58 *See* SoundExchange Ex. 85, Responses and Objections to First Set of Interrogatories to the Copyright Owner Participants from Sirius XM and Music Choice, Nov. 22, 2016, at Exs. A-C for Interrog. 4.

59 *See* SoundExchange Ex. 86, *Time for Three v. Entertainment One*, Complaint, Ex. 1 ¶ 8(h), No. 1:17-cv-00329-GBD (S.D.N.Y. Jan. 18, 2017).

60 Shapiro WDT, Table 1.

Figure 9: Effective average contract royalty rates under Sirius XM direct licenses, adjusted for SoundExchange expenses and at different hypothetical label/artist splits [RESTRICTED]

[redacted]

(69) Even a cursory review of Figure 9 reveals that, in virtually all circumstances, labels with artist contracts that allow the label to keep more than 50% of the royalties are far better off accepting direct licenses compared to the statutory rate—even if the nominal direct license rates were lower. The ability to collect more than the statutory 50/50 split with artists more than compensates for a lower nominal royalty rate. I have calculated for the past several years the break-even split that equates the nominally reduced direct license to the statutory rate. My analysis shows that in 2016 (the current period), any label that had an artist share of less than 46.8% fared better under the direct license that it would have under the statutory license.[61]

(70) Quite apart from the featured artist share, a direct license allows a label to retain the 5% non-featured artist share—a fact Sirius XM was quick to emphasis in its communications with potential licensors:

> [[redacted]][62]

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[61] In 2015, the break-even split was a 41% artist share, in 2014 the break-even split was a 36% artist share, and in 2013 the break-even split was a 37% artist share. In both 2011 and 2012, the break-even split was a 44% artist share.

[62] SoundExchange Ex. 82, [[redacted]], at SXM_DIR_00033693 (emphasis added).

(71) Assuming that the only benefits to the direct licensed label were retention of the non-featured artist share (5%) and avoidance of the SoundExchange administrative fee (4.9%), those two benefits alone would come very close to offsetting an agreement to accept a rate 1% below the statutory rate.

(72) As I have outlined above, several labels in the Top 30 were either pitched by Sirius XM on the advantages of receiving the artist share, or expressed (in emails to Sirius XM or conversations with me) that the artist share was a crucial deal point. These labels are [[redacted]][63] Two of those labels, [[redacted]], told me in interviews that receiving the artists' share was the "biggest selling point" and the "main reason" that they entered deals with Sirius XM. [[redacted]][66] For these three, at least, it seems reasonable to conclude that the artist share, and not steering, was the reason for the direct license. For others, obtaining the artist share may well have been a motivating factor (as urged by Sirius XM) but the degree to which that is so cannot be assessed.

(73) In any event, the fact that direct licenses unshackle labels from the statutory 50/50 split of revenues with artists, and allow labels to disburse royalties pursuant to the terms of their artist contracts, substantially undermines any effort to qualify the licenses as a relevant benchmark for market rates under the current statutory environment.

II.C.3. Royalties For Pre-72 Recordings

II.C.3.a. Effective Impact Of Pre-72 Direct License Agreements

(74) As discussed in my Initial Report, another important motivator for some of the labels signing direct licenses was the ability to start collecting royalties on pre-72 sound recordings. In fact,

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63 *See* Appendix A, Figure 65.

64 SoundExchange Ex. 83, [[redacted]], at SXM_DIR_00037538.

65 *Id.* [[redacted]], at SXM_DIR_00037542.

66 E1 has since been sued for not paying the share previously received by the artists from SoundExchange. Several of E1's contracts with artists or distributed labels were attached to the complaint. It appears from those contracts that E1 is entitled to deduct administrative costs before paying artists, and after recovering its costs pays artist 25% of the remaining royalty amounts. *See* SoundExchange Ex. 86, *Time for Three v. Entertainment One*, Complaint, Ex. 1 ¶ 8(h), No. 1:17-cv-00329-GBD (S.D.N.Y. Jan. 18, 2017).

executives from [[redacted]] told me that [[redacted]].

(75) [[redacted]][67]

(76) In August 2016, the most recent month with available data, [[redacted]]. My analysis shows that in August 2016, [[redacted]]. The economically relevant number is the total amount of royalties earned. Given the uncertain outcome over any litigation over pre-72 rights, and given the prolonged nature of the litigation underway, a direct license that included pre-72 works was the only practical way for [[redacted]] to monetize that catalogue. The trade-off of a lower rate on post-71 sound recordings to obtain previously unavailable payment for pre-72 sound recordings made economic sense if it resulted in higher total royalties.

(77) As seen in Figure 10 below, my analysis shows that [[redacted]].[68] That is not to suggest that pre-72 recordings have no economic value, and I am not opining on the existence of state-law copyright protection for pre-72 works, an issue that I understand is still being adjudicated in various courts. The point here is that if [[redacted]] had no practical way to obtain payment for pre-72 recordings, then it was economically rational for [[redacted]] to accept a lower rate for post-71 recordings in order to obtain payment for pre-72 recordings, assuming the total royalties increased as a result. [[redacted]]

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[67] SoundExchange Ex. 75, White Dep. 67:18-21, 69:17-18.

[68] [[redacted]]

Figure 10: Calculation of effective [[redacted]] royalty rate in August 2016 [RESTRICTED]

[redacted]

(78) [[redacted]]

(79) [[redacted]]

[69] SoundExchange Ex. 87, at sections 4, 8(c).

Figure 11: [[redacted]] royalties accrual and payments, pre-72 works license [RESTRICTED]

[redacted]

(80) [[redacted]]

Figure 12: Estimated [[redacted]] pre-72 effective royalty rate [RESTRICTED]

[redacted]

70 [[redacted]]

(81) This is yet another example of why taking royalty rates from direct licenses at face value would distort the estimate of overall market rates.

(82) [[redacted]] is not the only direct licensor that was concerned about pre-72 sound recordings. [[redacted]][72]

(83) Similarly [[redacted]]

(84) It is apparent from the negotiations between [[redacted]], as well as my interview with [[redacted]] executives, that obtaining payment for pre-72 sound recordings was the reason [[redacted]] agreed to a direct license, and steering was not a factor in the decision. With respect to the other direct license labels that obtained payment for pre-72 recordings via a direct license, I do not have evidence that would allow me to determine the relative importance of pre-72 sound recording payments versus other potential reasons for agreeing to a direct license.

II.C.4. Indexing

(85) As I discussed in my Initial Report, independent labels that sign direct licenses with Sirius XM may be able to increase the royalties they receive if they "over-index" based on share of performances on Sirius XM's webcasting service. This is due to the structural difference between the way SoundExchange distributes royalty payments to labels and the way Sirius XM pays royalties under most direct license agreements. [[redacted]

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[71] SoundExchange Ex. 88, at SXM_DIR_00087057.

[72] SoundExchange Ex. 89, [[redacted]], at SXM_DIR_00071183; *see also* SoundExchange Ex. 90, [[redacted]].

[73] SoundExchange Ex. 91, [[redacted], at SXM_DIR_00086704; SoundExchange Ex. 92, [redacted].

[redacted] of a direct license.[74]

(86) While SoundExchange allocates the royalties it receives from Sirius XM based on the share of "plays" on Sirius XM's radio satellite service,[75] Sirius XM pays the majority of its direct licensors royalties based on the labels' share of "performances" on Sirius XM's webcasting service. This metric, as opposed to "plays," counts the number of users that listen to each sound recording played on Sirius XM's webcasting service.

(87) Sirius XM appears to have switched from the "play-based" to "performance-based" methodology in [[redacted]][76] My analysis suggests that this shift was driven by a [[redacted] The change in methodology from "play" to "performance" appears to have been in response to this fall-off, and a new inducement used by Sirius XM to pitch independent labels on direct licenses.

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74 SoundExchange Ex. 75, White Dep. 112:11-19.

75 Regulations require SoundExchange to allocate royalties based on the monthly information it receives from Sirius XM. *See* 37 C.F.R. §§ 382.13(f), 370.4(d).

76 *See* SoundExchange Ex. 93, at SXM_DIR_00092228 [[redacted]].

Figure 13: Timing of Sirius XM's new direct license agreements, by quarter [RESTRICTED]

[redacted]

(88) I find it notable that the timing of when Sirius XM entered into new direct licenses is so "lumpy." If the growth in direct licenses had been organic, from an economic standpoint I would expect the new agreements to be evenly distributed over time, and gradually rising with the growth in the company's size (as measured by either subscribers, revenue, or profitability).[78]

(89) With that said, I am not surprised that Sirius XM's change in methodology resulted in more labels signing direct licenses. The possibility of "over-indexing" under a Sirius XM direct license is particularly advantageous to labels whose songs are played on Sirius XM's most popular channels (meaning, those channels with the highest listenership).[79] Such indies are likely to "over-index," meaning they receive a higher share of performances than plays. That creates the possibility of

[77] I only include new agreements with new licensees.

[78] As I established in my Initial Report, Sirius XM indeed exhibited steady and gradual growth in all of these categories between 2006-15. See my Initial Report at Figures 3, 5, 6 and 10.

[79] [[redacted].]

earning higher royalties under the direct license than under the statutory license—even at a lower royalty rate, and without any increase in plays.[80]

[redacted] Sirius XM was explicit about presenting the advantages of "over-indexing" to independent labels when soliciting direct deals. Of the Top 30 direct licensed labels I examined, the documents provided by Sirius XM indicate that at least 11 labels were told that they would either benefit or likely benefit from over-indexing.[81] [redacted]

[redacted]

[redacted] Similarly, at the request of Top 30 licensor [[redacted]], Sirius XM conducted a detailed, numbers-driven analysis demonstrating that the label would achieve [[redacted]] due to indexing.[83] The results of this analysis were shared with the label.[84] Shortly after this analysis was completed, [[redacted]] signed its direct license.[85]

[redacted]

80 See my Initial Report at 99-101 for a more in-depth discussion and example of the mechanics of over-indexing.

81 *See infra* Figure 14.

82 SoundExchange Ex. 97, [[redacted]], at SXM_DIR_00072295.

83 SoundExchange Ex. 98, [[redacted]], at SXM_DIR_00099221; *see also* SoundExchange Exs. 75 and 111, White Dep. 186:20-22 & Ex. 17.

84 SoundExchange Ex. 75, White Dep. 187:3-8.

85 *See* SoundExchange Ex. 99, [[redacted]].

86 SoundExchange Ex. 100, [[redacted]], at SXM_DIR_00027997.

[redacted]

[redacted]

[redacted]

[redacted]]

(94) Figure 14 below displays the Top 30 direct licensors who were pitched on over-indexing. Figure 64 (which can be found in Appendix A) identifies a selection of direct licensors outside of the Top 30 who were similarly pitched by Sirius XM.

Figure 14: Over-indexing pitches by Sirius XM to top-thirty direct licensed indies [RESTRICTED]

[redacted]

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87 SoundExchange Ex. 101, at SXM_DIR_00051890-91.

88 *Id.* at SXM_DIR_00051891.

89 SoundExchange Ex. 102, [[redacted]], at SXM_DIR_00061428.

90 SoundExchange Ex. 103, [[redacted]], at SXM_DIR_00045583.

[redacted]

[91] SoundExchange Ex. 101, [[redacted]], at SXM_DIR_00051890.

[92] SoundExchange Ex. 104, [[redacted]], at SXM_DIR_00043481.

[93] SoundExchange Ex. 105, [[redacted]], at SXM_DIR_00049938.

[94] SoundExchange Ex. 106, [[redacted]], at SXM_DIR_00042090.

[95] SoundExchange Ex. 107, [[redacted]], at SXM_DIR_00048673.

[96] SoundExchange Ex. 108, [[redacted]], at SXM_DIR_00058424-26.

[redacted]

(95) Based on my analysis of the Top 30 directly licensed independent labels during the period between September 2015 and June 2016, I find that [[redacted]] of the Top 30 indies actually benefitted from over-indexing during this period. These indies received more royalties under the direct license than they would have under the higher statutory rate. As Figure 15 indicates, the effective royalty rate for these labels, had they been paid based on spins, ranges from [[redacted]] to [[redacted]].

97 SoundExchange Ex. 97, [[redacted]], at SXM_DIR_00072295.

98 SoundExchange Ex. 109, [[redacted]], at SXM_DIR_00051336-37.

99 SoundExchange Ex. 110, [[redacted]], at SXM_DIR_00060221.

Figure 15: Top-thirty direct licensors that benefitted from over-indexing, September 2015 to June 2016 [RESTRICTED]

[redacted]

(96) As I discussed in detail in my Initial Report, the additional royalties earned by direct licensors that over-index are not borne by Sirius XM. Rather, they are borne by statutory licensors whose payments are computed based on spins not performances. That is so because additional royalty payouts to direct licensors increase the size of the deduction that Sirius XM is permitted to take from its statutory royalty obligation.[101] Sirius XM clearly understands this, as indicated by Mr. White's response to related questioning during his deposition.[102]

(97) [[redacted]

[100] SDARS royalties for post-72 recordings (excludes webcasting and pre-72).

[101] Initial Report, at 104-106.

[102] SoundExchange Ex. 75, White Dep. 136:20-138:2.

[103] *See* SoundExchange Ex. 111, [[redacted]], White Dep. Ex. 17; SoundExchange Ex. 75, White Dep. 188:1-190:25.

[redacted]]

(98) Not all labels benefit from indexing. Many direct license labels earn less than they would with the statutory license due to *under*-indexing. [[redacted]]

(99) Interestingly, some of the Top 30 labels to which Sirius XM presented over-indexing as a potential selling point in reality under-indexed. Consider the Top 30 licensor [[redacted]]. [[redacted]] I have seen no indication that Sirius XM disclosed this prediction to [[redacted]

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104 SXM_DIR_00090569.

105 SoundExchange Ex. 112, [[redacted]], SXM_DIR_00090571.

106 SoundExchange Ex. 75, White Dep. 140:13-17.

107 *See* SoundExchange Ex. 113, [[redacted]]. As George White explained, [[redacted]] SoundExchange Ex. 75, White Dep. 140:23-141:1, 141:8-9.

108 SoundExchange Ex. 114, [[redacted]], SXM_DIR_00049974, at 49976.

109 *Id.*

110 SoundExchange Ex. 115, [[redacted]

[redacted]]

(100) My analysis indicates that, in the first quarter of 2015, [[redacted]]

(101) In my review of the negotiating documents, I did not observe any examples of Sirius XM communicating to [[redacted]], or any other label, that indexing would have an adverse effect on its royalty payments under the direct license. That is true notwithstanding the fact that [[redacted]]

[redacted] Indeed, [[redacted]

[redacted]

[redacted]] at SXM_DIR_00090164; SoundExchange Ex. 116, at row 15 [[redacted]].

111 SoundExchange Ex. 105, [[redacted]], at SXM_DIR_00049936.

112 *See* SoundExchange Ex. 117, SXM_DIR_00090572 and SoundExchange Ex. 93, at SXM_DIR_00092228. [[redacted]]

113 SoundExchange Ex. 118, [[redacted]] at SXM_DIR_00095958.

114 Internal Sirius XM documents indicate that [[redacted]]

115 *See* SoundExchange Ex. 120, [[redacted]].

[redacted]]

(103) In sum, [[redacted]] of the Top 30 direct licensors benefitted from over-indexing. An additional [[redacted]] labels in the Top 30 were pitched on over-indexing even though they did not realize this benefit during the period that I analyzed (September 2015 to June 2016).[116] I was unable to conduct an indexing analysis for an additional four labels, because their licenses were signed very recently and/or because reliable data was unavailable.[117]

(104) With respect to the [[redacted]] of the Top 30 direct licensed indies who either benefitted or were pitched the benefits of over-indexing, it is simply not reasonable to assume that steering was the motivation for their decision to accept a direct license, given the fact that indexing more than offset (or the indies were led to believe that indexing might more than offset) the discount from the statutory rate.[118] For the balance of the Top 30 indies who did not benefit or were not pitched, it does not appear that Sirius XM informed them that they would be disadvantaged by Sirius XM's payment methodology—a fact the labels likely could not have known without disclosure by Sirius XM.

II.C.5. Advances

(105) When negotiating direct licenses, some labels seek (and obtain) cash advances, a benefit not available in the statutory environment where payments are processed quarterly by SoundExchange. This section discusses the potential benefits that are likely to accrue to labels and the logical impact on the direct license royalty rate. To address the latter issue upfront, as in any negotiation among rational parties, any benefits obtained by a label will likely lead to concessions on another issue, ultimately inducing the label to accept a lower direct license royalty rate.

(106) Cash advances provide credit and liquidity to labels, which flows directly from the theory of finance: the concept of the time value of money, that is a dollar received today is more valuable than a dollar received tomorrow. This benefit is particularly valuable to small labels that are more likely to be cash-constrained, as it facilitates their cash-flow management. In my discussions with Top 30 licensor [[redacted]], which did not receive an advance as part of its direct license,

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[116] *See supra* Figure 14.

[117] [[redacted]]

[118] Taken together, these [[redacted]] labels comprise over [[redacted]] of Sirius XM's average monthly royalty payments to direct licensors over the most recent 12 months of data (September 2015 to August 2016). *See* Figure 13 and Figure 14.

a label executive told me [[redacted]].[119]

(107) My analysis shows there are currently [[redacted]][120] active direct licenses with unique labels that provide for advances on expected future royalty payments, [[redacted]] of which are in the Top 30.[121] These advances range from [[redacted]] while the median advance was [[redacted]].[122] I summarize the key feature of the advances for the Top 30 labels in Figure 16 below.

Figure 16: Key provisions of Top 30 direct licenses with advances [RESTRICTED]

[redacted]

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[119] Conversation with [[redacted]].

[120] The labels are: [[redacted]]. I do not include [[redacted]]. *See* SXM_DIR_00001344. I therefore mention the original [[redacted]] advance for illustrative purposes only but do not analyze the details because currently there is no advance in place. Likewise, I do not include in this number labels that are paid on a flat-fee basis—most notably Top 30 licensor [[redacted]], which is unique for a number of reasons I discuss in Section II.C.7 below.

[121] These are: [[redacted]].

[122] *Id.*

[123] Based on my analysis of the average monthly accrued royalties during the most recent 12-month period with available data, September 2015 – August 2016.

(108) In addition to the [redacted] Top 30 licensors that did receive advances, the negotiating documents provided by Sirius XM indicate that the company either offered or considered offering advances to at least [redacted] other Top 30 licensors, although no advances were mentioned in the final contract.[124] According to Mr. White, an advance was an important deal point to [redacted] all of which are Top 30 licensors.[125]

(109) I find it notable that, of the [redacted] advances noted in Figure 16 above, [redacted] have already recouped and [redacted] are expected to recoup within the term of the contract. This is consistent with Sirius XM's practice of [redacted][126] If the advance is calibrated in such a manner, then Sirius XM has no reason to change its programming mix in order to realize value from its upfront investment. Royalties sufficient to pay the advance back will accrue in the ordinary course.

(110) [redacted]

(111) From an economic perspective, an overpayment is similar to a cash advance in the sense that the label has received money up front from the service, which is paid down over time through royalty streams. Unlike in the cash advance situation, however, labels who have been overpaid by Sirius XM have an additional incentive to renew their deals with Sirius XM. By doing so, an overpaid

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124 SoundExchange Ex. 121, [redacted], at SXM_DIR_00090261 [redacted]; SoundExchange Ex. 104, [redacted], at SXM_DIR_00043475 [redacted]; SoundExchange Ex. 108, [redacted], at SXM_DIR_00058418 [redacted].

125 SoundExchange Ex. 75, White Dep. 142:12-144:18; *see also* SoundExchange Ex. 122, [redacted]

126 *See* SoundExchange Ex. 123, [redacted]; SoundExchange Ex. 124, [redacted]

127 SoundExchange Ex. 92 [redacted].

128 SXM_DIR_00002998

label can extend the timeline over which they must reimburse Sirius XM. That improves the label's cash flow and is substantially more appealing than a one-time lump sum repayment (or, worse, a lawsuit by Sirius XM requiring such a payment). [[redacted]][129]

(112) Outside of the Top 30, I note that [[redacted]], a direct licensor noted by Mr. White for representing a Grammy winner,[130] also [[redacted]].[131]

(113) In short, cash advances and overpayment recoupments are forces that put downward pressure on direct license royalty rates. They are yet another differentiator between direct license agreements and the statutory environment and explain some labels' motivation to enter direct agreements with Sirius XM.

II.C.6. Distribution Fee

(114) Of the Top 30 direct licensors, three are distributors rather than traditional record labels. These licensors are [[redacted]]. Mr. White has testified that three other direct licensors are distributors—[[redacted]].[132] These [[redacted]] entities faced a unique motivation for signing a direct license with Sirius XM.

(115) A distributor contracts with artists and labels for the right to distribute content to music retailers and services. Although the distributor passes through to its distributed labels the royalties it collects on their behalf, the distributor collects a fee for doing so. Absent a direct license, distributors generally do not collect SDARS royalty payments for their distributed labels—and therefore do not collect their distribution fee—because SoundExchange makes those payments directly to the labels and artists. However, when a distributor enters into a direct license with Sirius XM, it acts as a "middleman" between Sirius XM and the labels. That is, the distributor receives the labels' share of royalties from Sirius XM, and then passes on those royalties to the label. Before passing on the royalties, however, distributors extract a contractually agreed-upon "distribution fee."

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129 SoundExchange Ex. 92, [[redacted]], at SXM_DIR_0001912-13.

130 *See* White WDT, at 3.

131 SoundExchange Ex. 125, [[redacted]], at SXM_DIR_00002475.

132 SoundExchange Ex. 75, White Dep. 37:14-38:4.

(116) When I spoke with a representative from [[redacted]], a Top 30 licensor/distributor, I was told that [[redacted]].

(117) E1 Entertainment is facing a federal lawsuit arising out of its direct deal with Sirius XM. This lawsuit alleges, among other things, that E1 concealed its direct deal with Sirius XM and failed to properly distribute to labels the royalty payments it received from Sirius XM.[133] Regardless of whether these claims have merit, the filing of the complaint gave me access to a contract between a label and E1 Entertainment, which was attached to the complaint. In that contract, E1 specified a 15% share as its distribution commission.[134] Media reports indicate that the distribution fee for INgrooves and The Orchard may be in this range, if not higher.[135] It is obvious that, for E1 and other distributors, the potential to obtain an otherwise unavailable distribution fee has to be an important inducement to the licensing arrangement.

II.C.7. Idiosyncratic Reasons

(118) In the preceding sections I have explored reasons why multiple labels within (and outside of) the Top 30 decided to enter direct deals with Sirius XM. In some cases, however, the reasons are idiosyncratic—they are specific to a particular label rather than a more widely-shared phenomenon.

(119) [[redacted]][137]

(120) Furthermore, unlike other licensors, [[redacted]]

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[133] *See* SoundExchange Ex. 86, *Time for Three v. Entertainment One*, Complaint, No. 1:17-cv-00329-GBD (S.D.N.Y. Jan. 18, 2017).

[134] *See id.* at Ex. B, p.4 & Schedule A.

[135] *See The Indie Musician's Guide to Digital Distribution*, HYPEBOT.COM, *available at* http://www.hypebot.com/hypebot/2013/11/the-indie-musicians-guide-to-digital-distribution.html (indicating that The Orchard was "speculated to take a 30% royalty cut" and that InGrooves was "speculated to take 10-30% of the royalty cut.").

[136] SoundExchange Ex. 126, [[redacted]].

[137] *Id.*

[138] SoundExchange Ex. 127, at SXM_DIR_00092230.

[redacted][139]

(121) Finally, unlike other licensors, [redacted]

(122) In the context of this unique arrangement, "steering" is not an economically meaningful concept. Sirius XM has already paid for the right to play [redacted] recordings, to as great an extent as it pleases, on a dedicated station. And [redacted] has secured the exclusivity and extra publicity that comes with having its own channel. The economics of this arrangement do not translate into Prof. Shapiro's steering paradigm. It is not possible for Sirius XM to play [redacted] recordings more (or less) in response to their royalty rate, because no royalty rate has been negotiated and agreed to up front.[142]

(123) There is another, very different sort of idiosyncratic reason why some labels may have agreed to a direct license—unawareness of their options. [redacted]

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139 SoundExchange Ex. 126, [redacted], at sec. 2.04.

140 *Id.* at sec. 4.03 [redacted].

141 *Id.*

142 [redacted]

[redacted]]

(124) It is my belief that the former reason (ignorance) may be more common among smaller labels, who may be less sophisticated actors and may be "new to the game" of music royalties. I note in particular that, according to Mr. White, [[redacted]][144] Based on my experience in the field of negotiation, it would not surprise me if at least some of these labels shared the misimpressions of the two Top 30 executives mentioned above. Relevant to these proceedings, economically irrational behavior—in which one party makes decisions based on misinformation and lack of sophistication—is not informative in constructing a market-based benchmark premised on the actions of willing buyers and willing sellers.

(125) The three Top 30 labels that entered into direct licenses for idiosyncratic reasons plainly were not motivated by the hope of steering benefits.

II.C.8. Access To Programmers

(126) In his testimony, George White claims that "the most valuable component of a direct license is the direct relationship with Sirius XM it affords and all the benefits that relationship entails."[145] He goes on to describe the main "benefit" to which he is referring as the opportunity to potentially increase plays due to improved access to Sirius XM's programmers.

(127) It is important to note that this benefit is different from the "steering" benefit in the Merlin agreement that influenced the Judges' *Web IV* determination. In *Web IV*, steering referred to a contractual guarantee of increased plays resulting from the lower cost of music under a direct license. In this case, the purported improved access to programmers that Mr. White emphasizes is in no way guaranteed to result in increased plays on Sirius XM. Mr. White explained why at his deposition: [[redacted]][146]

[143] SXM_DIR_00000989 [[redacted]]; SXM_DIR_00003707 [[redacted]].

[144] SoundExchange Ex. 75, White Dep. 132:16-133:1 [[redacted]].

[145] White WDT, at 10.

[146] SoundExchange Ex. 75, White Dep. 76:1-6.

(128) Not surprisingly, then, Sirius XM explicitly told its direct licensors that any additional access to programmers it could provide would not necessarily increase plays. For example, [[redacted]][147]

(129) Internal Sirius XM correspondence confirms that [[redacted]][150]

[redacted] Mr. White's correspondence reflects [[redacted]

[redacted]

[redacted]

[redacted]

[147] SoundExchange Ex. 132, at SXM_DIR_00094689

[148] SoundExchange Ex. 133, [[redacted]], at SXM_DIR_00099544.

[149] *Id.*

[150] *Id.* [[redacted]].

[151] White WDT, Attach. A.

[152] SoundExchange Ex. 134 [[redacted]].

[redacted][153]

(131) Mr. White confirmed at his deposition that [[redacted]][155]

(132) Mr. White also confirmed that [[redacted]][156]

(133) In light of the above, it is unsurprising that none of the direct license agreements I have examined contain any provisions promising increased plays or steering.[157] That is in contrast to many of the other benefits to direct licensors I have described above. [[redacted]]

(134) Finally, if steering were a real economic phenomenon, then I would not expect to see emails like the following sent by a direct licensor:[158]

[[redacted]

[redacted]

[redacted]

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153 SoundExchange Ex. 135, at SXM_DIR_00098588; SoundExchange Ex. 136; SoundExchange Ex. 137, at SXM_DIR_00098137.

154 SoundExchange Ex. 75, White Dep. 116:21-117:7.

155 *Id.* at 115:12-116:1.

156 *Id.* at 183:3-185:20 [[redacted]].

157 Initial Report, at 93.

158 SoundExchange Ex. 138, [[redacted]], at SXM_DIR_00096933-34.

[redacted]

[redacted]]

(135) In the above paragraphs I have explained how, as a factual matter, Sirius XM did not "steer" towards its direct licensors. But it is also important to understand how, as a matter of economics, Sirius XM's offer of improved access to programmers is not helpful in setting the rate for the industry as a whole.

(136) Improved access to Sirius XM programmers is a benefit that Sirius XM can only give to a limited number of labels. Programmers have finite time to take calls or listen to new sound recordings. Per Mr. White's testimony, Sirius XM programmers are already inundated with requests from labels and artists to play their music.[159] As the number of direct licensors increases, the degree to which their access to programmers is preferential will necessarily diminish. At the theoretical margin, when all labels are directly licensed, none of their "access" to Sirius XM's programmers would be unique or special.[160] That is to say, they would receive the same access to programming staff that they would have absent a direct deal with a reduced rate.

(137) It is important to interrogate what would happen in this theoretical scenario, when the value of the "benefit" of improved access has fallen to zero. If Sirius XM was price-sensitive in selecting what recordings to play, then arguably this lowered market equilibrium would stick—a conclusion that the Judges reached with respect to the kind of "steering" at issue in *Web IV*. But Sirius XM has conceded that it is *not* price-sensitive when it comes to programming directly licensed content. As described above, [[redacted]][161], programmers decide what recordings to play based on their relative aesthetic merits—*not* based on their price relative to other recordings. Given that situation, there is no reason for direct licensors to accept a lowered royalty

[159] White WDT, at 11.

[160] As Mr. White properly observed, [[redacted]] SoundExchange Ex. 75, White Dep. 124:12-17.

[161] *Id.* at 185:6-20 [[redacted]].

rate absent the "increased access" benefit that they were promised. Once that benefit disappears—which would happen when enough labels are directly licensed—one would expect direct licensors to re-raise their prices, either via a renegotiation or simply by terminating their direct licenses in favor of the statutory rate.

(138) In other words, even if "increased access to programming staff" was the sole reason licensors signed direct deals (which it plainly was not) that benefit should not be expected to result in a stable, lowered market equilibrium at the directly licensed royalty rate. Accordingly, that lowered rate is not indicative of a competitive, market rate and is not instructive for setting the statutory rate.

II.C.9. Summary

(139) Figure 17 below displays a summary of my findings regarding the Top 30 licensors. In the right hand column, I summarize the factors that appear to have motivated the licensor to sign a direct deal with Sirius XM. These factors are a combination of reasons presented by Sirius XM in pitch emails and negotiation documents; reasons told to me directly by the labels; and reasons that are apparent from my review of the negotiation history and financial documents provided by Sirius XM.

Figure 17: Top 30 direct license labels, by average monthly royalties over the past 12 months[162] [RESTRICTED]

[redacted]

[162] Over the most recent 12-month period between September 2015 and August 2016; only months with values are averaged.

(140) As Figure 17 makes clear, the evidence indicates that [[redacted]] out of the 30 top licensors were pitched on a direct deal and/or signed a direct deal for reasons that were not steering. Taken together, these [[redacted]] labels account for [[redacted]] of average monthly royalties earned by ***all*** direct licensors.

(141) In addition, while I have not reviewed the negotiation history for every direct licensor outside of the Top 30, I have reviewed evidence indicating that several were pitched on a direct deal and/or signed a direct deal for reasons that were not steering.[163] Taken together, these [[redacted]] labels account for an additional 1.5% of average monthly royalties earned by all direct licensors.

(142) Between the [[redacted]] licensors in the Top 30 listed above, and the additional, smaller direct licensors mentioned elsewhere in my report, I have accounted for [[redacted]] of average monthly royalties earned by all direct licensors, and determined that this economic activity was driven by factors that were not steering.

(143) The remaining licensors, like all direct licensors, benefitted from the lack of a SoundExchange administrative fee. At a minimum, then, the effective royalty rate for these labels is 10.02%, rather than the face value 9.5% in their contracts—[[redacted]].[164] I have seen no evidence that allows me to conclude that the remaining delta between these labels' direct rate and the statutory rate is attributable to steering. For instance, I have reviewed the direct license contracts of Top 30 licensors [[redacted]] and have found no evidence of any promise by Sirius XM to "steer" towards playing these labels' recordings, in exchange for a lowered royalty rate.[165] Nor have I have seen comparable evidence of promises or guarantees in the negotiation history. Accordingly, I am unable to conclude that any remaining delta for these [[redacted]] labels can be attributed to steering.

(144) As I previously noted, Prof. Shapiro acknowledged in his deposition that, [[redacted]] [166] Given that I have affirmatively shown that the majority of directly licensed activity has nothing to do with steering, and given the absence of evidence that the remaining fraction has

[163] These labels are either mentioned in the body of this report or described in Figure 64 and Figure 66 of Appendix A. They are: [[redacted].]

[164] SoundExchange Ex. 73, Shapiro Dep. 121:8-122:13 [[redacted]].

[165] *See* [[redacted]]

[166] SoundExchange Ex. 73, Shapiro Dep. 120:13-16.

anything to do with steering, Sirius XM's direct licenses are simply not an informative benchmark.

III. Critique Of Prof. Shapiro's Calculation Of Royalties As Percentage Of Revenue

(145) In *SDARS I,* the Judges first determined a per-subscriber royalty rate and then converted it into percentage-of-revenue terms. This resulted in a percentage of revenue royalty rate of 13%, which the Judges observed was "the upper boundary most strongly indicated by marketplace data."[167]

(146) Prof. Shapiro proposes a similar approach where he first computes a per-subscriber royalty rate ($1.032), and then divides it into Sirius XM's ARPU ($12.80) to arrive at a percentage of revenue royalty rate (8.1%).[168] However, there are many methodological issues with Prof. Shapiro's execution of an otherwise sound approach.

(147) First, Prof. Shapiro uses an inappropriate royalty rate per subscriber. His $1.032 rate is derived from the per-play royalty rates determined by the Judges in the *Web IV* proceedings.[169] Leaving aside the question of whether the *Web IV* rates have any applicability here—a subject I understand is being addressed by Jonathan Orszag and Robert Willig—the Judges already determined a decade ago that the then-appropriate royalty rate per subscriber was $1.40.[170] Prof. Shapiro offers no analysis or support for how or why the appropriate royalty rate per subscriber would have dropped by 36% since the time of *SDARS I.*

(148) In contrast, my methodology, as described in my Initial Report, updates the *SDARS I* per-subscriber rate of $1.40 for inflation to state it in the equivalent of today's dollars, resulting in a royalty rate of $1.68 per subscriber.[171]

(149) Next, Prof. Shapiro uses an inappropriate measure of revenue per subscriber. He divides his $1.032/subscriber rate into an ARPU figure of $12.80.[172] Prof. Shapiro devotes one paragraph to justifying his decision to use a monthly ARPU of $12.80, which he finds in an unnamed and unreferenced document described as a "Sirius XM financial document created in the ordinary

[167] *SDARS I*, at 4097.

[168] Shapiro WDT, at 54-55.

[169] *Id.* at 54.

[170] *SDARS I*, at 4093. See also my discussion in the Initial Report, Section II.D.1.

[171] Initial Report, Section II.D.1.

[172] Shapiro WDT, at 54-55.

course of business."[173] I infer that Prof. Shapiro is referring to the Sirius XM [redacted][174]

(150) [redacted] so it is unclear how Prof. Shapiro concluded that "[a]s is detailed in this document, ARPU includes all subscription related revenues (including the separate subscriber invoice line item for U.S. Music Royalty Fees), but excludes other revenue sources, such as those earned from the sale of radios."[175] There is no evidence that Prof. Shapiro conducted any analysis of this number.

(151) Because the 2015 ARPU figure from the same document matches the ARPU figures published in Sirius XM's SEC filings, I conclude that the 2016 ARPU estimate of $12.80 used by Prof. Shapiro was calculated using the same methodology. In Figure 18, I recreate the Sirius XM computation of ARPU, based on the methodology detailed in its SEC filings (for 2015 and first half of 2016 actuals) as well as the 2016 forecast (per data from the [redacted]).

Figure 18: Computation of Sirius XM's ARPU, in thousands

	Line item	2015 actual	2016 first half actual	2016 estimate per Prof. Shapiro
A	Subscriber revenue, excluding connected vehicle	$3,726,340	$1,996,406	[redacted]
B	Add: advertising revenue	$122,292	$65,062	[redacted]
C	Add: other subscription-related revenue	$410,644	$231,593	[redacted]
D=A+B+C	**ARPU revenue**	**$4,259,276**	**$2,293,061**	[redacted]
E	Daily weighted average number of subscribers	28,337	30,044	[redacted]
F=D/E/# months[176]	**ARPU**	**$12.53**	**$12.72**	**$12.80**

Source: 2015 from Sirius XM 2015 10-K, at 39; 2016 first half from Sirius XM 2016 Q2-10-Q, at 36. The 2016 forecast applies the same methodology but with data from SXM_DIR_00025989_RESTRICTED.

(152) There are several problems with Prof. Shapiro's computations. First, it is unclear why Prof. Shapiro elected to use the forecasted 2016 ARPU figure from the [redacted] [redacted] as opposed to the actual figure of $12.72, which was published in Sirius XM's Q2-2016 10-Q and available at the time of his written direct testimony.[177]

[173] Shapiro WDT, at 54.

[174] SoundExchange Ex. 143, [redacted].

[175] Shapiro WDT, at 54.

[176] For annual figures this formula is divided by 12; for the first half actuals this formula is divided by 6.

[177] Sirius XM, Quarterly Report for Q2-2016 (Form 10-Q), at 31 (July 26, 2016).

(153) Far more importantly, by relying on Sirius XM's ARPU from the SEC statements Prof. Shapiro uses the wrong revenue metric. (ARPU is calculated by dividing Sirius XM's revenues (the numerator) into its subscriber base (the denominator).)

(154) Under the regulations promulgated by the Judges, the percentage of revenue rate paid by Sirius XM is applied to a specific revenue base—what the regulations define as "Gross Revenues."[178] Prof. Shapiro agrees that the revenue number used to calculate a percentage of revenue royalty rate should match Gross Revenues (the revenue base defined by the Judges).[179] However, instead of following through with this approach, Prof. Shapiro instead uses the ARPU calculated by Sirius XM for SEC reporting purposes. That is a conceptual error. Sirius XM's SEC-reported ARPU includes revenue that, according to the regulations, cannot be included in "Gross Revenues"—for instance, advertising revenue and equipment revenue. In other words, Prof. Shapiro's ARPU number is inflated by revenue streams that must be excluded when Sirius XM calculates its royalty obligations.

(155) A conceptually accurate method starts instead from the "Gross Revenues" figure reported by Sirius XM to SoundExchange in the course of paying out royalties. This number is, at the very least, Sirius XM's interpretation of its "Gross Revenues" per the regulations. This number must, however, be trued up to account for the exclusion of revenue that Sirius XM attributes to directly licensed works and pre-72 works. The current regulations already permit Sirius XM to take a deduction for these works, by excluding a portion of its royalty fee at the "back end."[180] This revenue must therefore be considered at the "front end"—the Gross Revenues numerator—in order to obtain a conceptually accurate ARPU and, from there, an accurate royalty rate. Because this exclusion should happen only once (either through a reduced royalty rate *or* through a back-end exclusion but not both) I add this revenue back to Gross Revenues. Following this process, I determined Sirius XM's gross revenues to be [[redacted]].[181]

(156) Obviously, as a simple matter of arithmetic, it matters whose number is right. Prof. Shapiro's $1.032 per-subscriber rate results in a percentage of revenue rate of 8.1% when the SEC ARPU of $12.80 is used. However, if the average revenue per subscriber from my Initial Report is used ($10.72), then Prof. Shapiro's 8.1% royalty rate rises to 9.6% (before any of his other inputs are corrected).[182]

(157) Since the time of my Initial Report, more detailed revenue figures have been made available to me, for instance through official Sirius XM documents used as back-up for calculating royalties

[178] *See* 37 C.F.R. § 382.11.

[179] SoundExchange Ex. 73, Shapiro Dep. 105:15-19.

[180] *See* 37 C.F.R. § 382.12(d), (e).

[181] As computed in Initial Report, Figure 39.

[182] Shapiro WDT, at 55.

paid to SoundExchange. Figure 19 shows the updated calculation of Sirius XM's exclusions from reported revenue to SoundExchange during the first half of 2016. I have highlighted in yellow those cells that contain data that has been updated.

Figure 19: Calculation of Sirius XM's exclusions from reported revenues to SoundExchange, first half of 2016[183] [RESTRICTED]

[redacted]

(158) As a result of this update, the total Gross Revenues for the first half 2016 is now [[redacted]], as shown in Figure 20. (Again, I have highlighted in yellow those cells that contain updated data.)

Figure 20: Calculation of Sirius XM's Gross Revenue, first half of 2016[184] [RESTRICTED]

[redacted]

(159) Using the current data leads to an average revenue per subscriber of $10.68, compared to $10.72 in my Initial Report.[186] This leads to an updated calculation of the percentage of revenue royalty

[183] This figure updates Figure 38 from my Initial Report.

[184] This figure updates Figure 39 from my Initial Report.

[185] In the new data source this data contains decimal information reflected here.

[186] In my Initial Report, I performed a calculation using the *SDARS I* determination that the 2006 royalty payment per subscriber should be $1.40. I increased that amount for inflation to get a 2016 inflation-adjusted royalty per subscriber

rate of 15.74%, compared to my original calculation of 15.68%. I note that both of these values round to 15.7%, which is the level of precision I used in my Initial Report.[187] I believe that for percentage of revenue royalty calculations, average revenue per subscriber of $10.68, rather than the SEC-reported ARPU number used by Prof. Shapiro, is the correct number.

IV. Updating Analysis From My Initial Report

(160) In this section, I update my key analysis from the Initial Report for newly received information. In Section II.E of my Initial Report I discussed Sirius XM's projected future performance based on (1) the most recent Sirius XM internal forecast found in the record at the time, the [[redacted]], and (2) Wall Street analyst reports as of October 2016.

(161) Subsequent to the publication of my report, I have obtained an updated internal forecast, the [[redacted]], which Prof. Shapiro relied on, and I re-run my analysis based on these latest internal figures from Sirius XM. Similarly, I reviewed the most recent Wall Street analyst reports and consensus forecast on Sirius XM's future performance and update my analysis accordingly.

(162) None of the changes are material and do not affect my conclusion about Sirius XM's strong expected future performance.

IV.A. Updated Historical Financial Performance

(163) On January 5, 2017, Sirius XM announced that it "exceeded 2016 subscriber guidance."[188] Consistent with my analysis and expectations, Sirius XM's CEO Jim Meyer stated:

> SiriusXM had an incredible 2016. In addition to topping 31 million subscribers, our business is running efficiently and we are attaining records in revenue, adjusted EBITDA, adjusted EBITDA margin, and free cash flow. Our relationships with our OEMs have never been stronger and demand for our product continues to grow.
>
> We continue to make substantial investments in new products, content and technologies, including investments in new satellites, our next-generation 360L platform, wideband chipsets, and new marketing capabilities. In 2017, we expect to

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amount of $1.68. In the final step, I computed royalties as a percentage of revenue by dividing the inflation-adjusted *SDARS I*-based royalties per subscriber into 2016 average revenue per subscriber of $10.72. Using the new average revenue per subscriber number of $10.68 results in a 15.74% royalty rate. In both this calculation and the calculation from my Initial Report, I use the same number of total paid subscribers—30.44 million. *See* Sirius XM, Quarterly Report for Q2-2016 (Form 10-Q), at 31; *see* Initial Report, at 52.

[187] Initial Report, ¶151.

[188] Press Release, SiriusXM, *SiriusXM Exceeds 2016 Subscriber Guidance; Issues 2017 Subscriber and Financial Guidance*, January 5, 2017, http://s2.q4cdn.com/835250846/files/doc_news/SiriusXM-Exceeds-2016-Subscriber-Guidance-Issues-2017-Subscriber-and-Financial-Guidance.pdf.

> continue our never-ending focus on bringing our customers the best content bundle available, and our strong record of delivering cost-effective growth and returning substantial capital to stockholders through stock buybacks and our recently-introduced dividend.[189]

(164) In 2016, Sirius XM added more than 1.7 million net subscribers, beating its (already increased) guidance. In the closely watched "Self-pay net subscriber additions" line item, it added 1.66 million self-pay subscribers in 2016, above its upward-revised guidance of 1.6 million. (Sirius XM's original guidance was 1.4 million.[190]) In total, Sirius XM grew its subscriber count by 6% in 2016, ending the year with 31.346 million subscribers.[191]

(165) On February 2, 2017 Sirius XM released its 2016 10K, announcing strong financial results in 2016 and demonstrating extraordinary growth and profitability, as shown in Figure 21.

Figure 21: Sirius XM 2016 actuals, in millions other than per share amounts

Line item	2016 actuals	Growth (vs. 2015)
EOP subscribers	31.346	5.9%
Total revenue	$5,017.2	9.8%
Adjusted EBITDA	$1,875.8	13.2%
FCF per share	$0.30	25.6%
Net income	$745.9	46.3%

Source: Sirius XM 2016 10-K.

(166) Sirius XM's 2016 revenue grew by 10% compared to 2015, topping $5 billion. EBITDA grew by 13% to $1.9 billion, and free cash flow per share grew 26% to $0.30. Finally, Sirius XM's net income grew a staggering 46% to $746 million.

(167) These impressive results also beat out both internal and external expectations, as shown in Figure 22.

[189] *Id.*

[190] Initial Report, Figure 43.

[191] Sirius XM, Annual Report for 2016 (Form 10-K), at 31 (Feb. 2, 2017).

Figure 22: Sirius XM 2016 actuals compared to internal and external forecasts, in millions other than per share amounts

Line item	Actual	SIRI Internal Forecast	Actuals vs. Internal Forecast	Wall St. Estimate	Actuals vs. External Forecast
EOP subscribers	31.346	[redacted]	[redacted]	31.382	-0.1%
Total revenue	$5,017.2	[redacted]	[redacted]	$4,997.6	0.4%
Adjusted EBITDA	$1,875.8	[redacted]	[redacted]	$1,820.9	3.0%
FCF per share	$0.30	[redacted]	[redacted]	$0.30	1.3%
Net income	$745.9	[redacted]	[redacted]	$705.3	5.8%

Source: Sirius XM 2016 10-K; [[redacted]]; Wall Street analyst reports and Thomson One.

(168) Sirius XM's 2016 performance significantly exceeded [[redacted]] external expectations, except for a small shortfall in ending subscribers relative to the Wall Street consensus forecast. Most significantly, Sirius XM's 2016 net income was 6% higher than [[redacted]] external expectations. Sirius XM's CEO James Meyer summarized the company's performance in the earnings call:

> The game remains the same at SiriusXM. Start with a great business plan, execute it well, generate lots of cash and invest and deploy that cash wisely to the benefits of our shareholders. SiriusXM delivered across the board in 2016, setting records for subscribers, revenue, adjusted EBITDA and free cash flow. More than 31 million subscribers, more than $5 billion of revenue and our highest ever adjusted EBITDA and free cash flow. Our track record of delivering what we tell you remains strong as we also beat all of our 2016 guidance on each of these metrics.[192]

(169) Sirius XM's recently announced 2017 guidance is consistent with these trends.[193] In my Initial Report I noted that ["[redacted]"][194] Consistent with that conclusion, several Wall St. analysts recently prominently noted Sirius XM's history of conservative guidance. On the cover page of its most recent analyst report, J.P. Morgan discussed the conservative nature of the guidance provided by Sirius XM.[195]

> **Conservative guidance maintained.** Sirius XM maintained its 2017 financial and subscriber guidance (which has historically been on the conservative side). (emphasis from original text)

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[192] Sirius XM Holdings (SIRI) Q4 2016 Results - Earnings Call Transcript, February 2, 2017.

[193] Sirius XM's announced guidance is as follows: Self-pay net subscriber additions of approximately 1.3 million; revenue of approximately $5.3 billion; adjusted EBITDA of approximately $2.025 billion; and free cash flow of approximately $1.5 billion. *See* SiriusXM Press Release, *supra* note 188, at 2.

[194] Initial Report, ¶164 and more broadly Section II.E.2.b.

[195] SoundExchange Ex. 144, J.P. Morgan, "Sirius XM Radio Inc., Continue to Like the SIRI Story and Future Growth Drivers; Establish $5 Price Target," February 2, 2017, at 1 ("J.P. Morgan Report").

(170) And Evercore ISI devoted an entire paragraph to this issue, also on the cover page of its most recent report.

> **Guidance has historically been conservative:** SIRI has a history of being conservative in its guidance and usually updates it as the year progresses. For example, SIRI's full year 2016 results will be 2-7% ahead of its initial financial guidance, and ~20% ahead of its initial subscriber guidance. We believe the company's 2017 guidance reflects similar conservatism.[196]

(171) It therefore stands to reason that Sirius XM is likely to perform better than the guidance provided to the market by the company.

IV.B. Forecasted Sirius XM Performance

(172) In his Written Direct Testimony, Prof. Shapiro relied on the [[redacted]],[197] which appears to be an updated version of the [[redacted]][198] that I relied on in my Initial Report. The updated [[redacted]] is by-and-large consistent with the [[redacted]], with some minor changes: In the [[redacted]], [[redacted]]. As I show in this section, that updated forecast does not materially affect my conclusions.

(173) First, I start by showing the updated [[redacted]] in Figure 23. I note that the [[redacted]] contains actuals through 2015, whereas in the [[redacted]] (used in my Initial Report) the last year of actuals was 2014.

[196] Evercore ISI, "SIRIUS XM RADIO INC., 4Q16: No Surprises in the Quarter," February 2, 2017, at 1 (emphasis in original).

[197] SoundExchange Ex. 143, SXM_DIR_00025989_RESTRICTED.

[198] SXM_DIR_00020919_RESTRICTED.

Figure 23: Updated internal Sirius XM projections under the [[redacted]], 2016[199]-2021, in millions [RESTRICTED][200]

[redacted]

(174) Next, I show the differences between the [[redacted]] and [[redacted]] for the major line items of interest.

(175) Figure 24 shows that under the new [[redacted]] the number of Sirius XM's EOP subscribers is now expected to grow at a [[redacted]], compared to a [[redacted]]. Sirius XM's updated forecast expects the company to have [[redacted]] subscribers by the end of 2021.

Figure 24: Comparison of EOP subscribers between Sirius XM's [[redacted]] and [[redacted]], in thousands [RESTRICTED]

[redacted]

(176) However, the [[redacted]] also shows that the company expects [[redacted]]. First, Figure 25 shows that under the [[redacted]], total revenue is expected to grow at a CAGR of

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[199] This forecast was prepared during 2016 and thus 2016 is a forecasted value.

[200] This figure updates Figure 42 from my Initial Report.

[201] Six-year Compounded Annual Growth Rate ("CAGR"), between 2015 (final year of actuals in the forecast) and 2021.

[202] End Of Period ("EOP") Subscribers.

[203] The 2015 values are estimates in the 2015 LRS and actuals in the 2016 LRS.

[204] My goal is to show the long-term growth contained in each of the forecasts. Both CAGR calculations are over a 6-year period from the most recent period of actuals to the latest available forecast. Thus the 2015 LRS Plan CAGR is computed between 2014 (data not shown here but presented in Figure 42 of my Initial Report) and 2020, while the 2016 LRS Plan CAGR is computed between 2015 and 2021.

[redacted] compared to the [redacted] CAGR in the [redacted]. This results in [redacted] in 2020 (the final year with overlapping forecasts). By 2021, Sirius XM now expects to be generating [redacted] in revenue.

Figure 25: Comparison of Total revenue between Sirius XM's [redacted] and [redacted], in millions [RESTRICTED]

[redacted]

(177) Correspondingly, the company revised its profitability outlook as well. Figure 26 shows that, under the [redacted], adjusted EBITDA is now expected to grow at a CAGR of [redacted], compared to [redacted] under the [redacted]. This leads to a 2020 EBITDA [redacted].[207] Nonetheless, Sirius XM is projecting that by 2021 it will be generating [redacted] in EBITDA.

Figure 26: Comparison of Adjusted EBITDA between Sirius XM's [redacted] and [redacted], in millions [RESTRICTED]

[redacted]

(178) Figure 27 shows a similar trend with Net income, which is under the [redacted] expected to grow at a CAGR of [redacted], compared to the [redacted] CAGR of [redacted]. In 2020, Net

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205 The 2015 values are estimates in the 2015 LRS and actuals in the 2016 LRS.

206 *See supra* note 204.

207 The EBITDA difference is approximately [redacted] larger than the revenue difference due to fixed costs that are not scalable despite the reduced top line.

208 2015 values are estimates in the 2015 LRS and actuals in the 2016 LRS.

209 *See supra* note 204.

income is expected to be [redacted] than in the previous forecast.[210] By 2021, Sirius XM is projecting it will be earning [redacted] billion in net income.

Figure 27: Comparison of Net income between Sirius XM's [redacted] and [redacted], in millions [RESTRICTED]

[redacted]

(179) Finally, Figure 28 shows that free cash flows are expected to grow at CAGR of [redacted] under the [redacted], compared to a [redacted] CAGR found in the previous forecast. The new forecast shows only a [redacted] difference in 2020, and by 2021, Sirius XM is expecting it will be generating [redacted] in free cash flow.

Figure 28: Comparison of Free cash flow between Sirius XM's [redacted] and [redacted], in millions [RESTRICTED]

[redacted]

(180) Perhaps the most noticeable change of relevance to this proceeding in the Sirius XM [redacted] compared to the [redacted] is in the assumption on long-term royalty rates. The new forecast assumes a [redacted] the line item that includes the statutory royalties payable to SoundExchange, as seen in Figure 29.

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[210] The net income reduction is lower than the EBITDA reduction due to the after-tax nature of this line item.

[211] 2015 values are estimates in the 2015 LRS and actuals in the 2016 LRS.

[212] *See supra* note 204.

[213] 2015 values are estimates in the 2015 LRS and actuals in the 2016 LRS.

[214] *See supra* note 204.

Figure 29: Comparison of Programming royalties between Sirius XM's [[redacted]] and [[redacted]], in millions [RESTRICTED]

[redacted]

(181) Ignoring the discrepancy in 2015 (because the actuals value in the [[redacted]] appears to contain the impact of the pre-72 royalties settlement),[217] the new forecast assumes higher annual royalty payments of between [[redacted]].

(182) This increase is even more significant considering that revenue, which is the primary driver for royalty obligations, is lower in the [[redacted]].[218] Figure 30 presents Sirius XM's programming royalties as a percentage of total revenue and shows a significant jump in the [[redacted]]. This is a simplified calculation and is presented for illustrative purposes only; programming royalties include non-SDARS royalties and total revenue includes revenues not subject to SDARS royalty calculations. Nonetheless, the chart shows the movement in internally-anticipated royalty rates.

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[215] 2015 values are estimates in the 2015 LRS and actuals in the 2016 LRS.

[216] *See supra* note 204. 2014 Programming royalties are presented in my Initial Report, ¶203.

[217] *See, e.g.*, Sirius XM, Annual Report for 2015 (Form 10-K), at 24 (Feb. 2, 2016): "The increase [in Revenue Share and Royalties] was primarily due to $128,256 [thousand] in expense recorded during the year ended December 31, 2015 related to our settlements associated with our use of certain pre-1972 sound recordings through December 31, 2015."

[218] It is theoretically possible, although unlikely, that Sirius XM's new forecast simply assumes [[redacted]]

Figure 30: Programming royalties as percentage of total revenue in Sirius XM's [[redacted]] and [[redacted]][219] [RESTRICTED]

[redacted]

Source: Lys analysis, [[redacted]].

IV.B.1. Updated Wall Street Analyst Consensus Estimate

(183) I also reviewed the most recent analyst reports as well as the consensus estimate as collected by Thomson One (the same source I used in the Initial Report).[220]

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[219] The 2015 actuals are adjusted to exclude the impact of the one-time pre-72 settlement.

[220] The consensus estimate is constantly evolving because Thomson One updates the calculations in real time, as analysts update their underlying forecasts. For practical reasons, I had to select a cut-off point for obtaining this information in order to allow me to analyze it and incorporate it into the report before the submission deadline. I downloaded the results for the last time on February 7, 2017. This date was 5 days after the release of Sirius XM's 2016 results, allowing the market to absorb the news.

(184) Figure 31 presents the analyst consensus forecasts for the same Sirius XM key metrics that I analyzed in the Initial Report.

Figure 31: February 2017 consensus estimates of Sirius XM's key metrics, 2016-2020, in millions other than per share amounts[221]

In millions	2016 (A)	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR 2016-20
Ending subscribers	31.3	32.7	33.9	34.7	35.7	3.3%
Revenue	$5,017	$5,351	$5,659	$5,961	$6,177	5.3%
EBITDA	$1,876	$2,030	$2,199	$2,349	$2,486	7.3%
Free cash flow per share	$0.30	$0.34	$0.40	$0.34	$0.37	4.7%
Net income	$746	$801	$888	$993	$1,052	9.0%

Source: Thomson One.

(185) Next, I show the differences between the October 2016 analyst estimates and the February 2017 analyst estimates for the key line items of interest.

(186) Figure 32 shows that Wall Street analysts are slightly less optimistic about Sirius XM's outlook for subscribers, with the consensus estimate for ending subscribers declining by 1 million in 2020 and closing at 35.7 million for a four-year CAGR of 3.3%. Compared to the October 2016 estimate, the new consensus estimate incorporates data from one new investment firm (BTIG). Thomson One started including BTIG in their consensus estimate for Sirius XM's revenue and net income, and correspondingly, I added them to the consensus estimate of ending subscribers, which I construct manually.[222]

[221] This figure updates Figure 48 from my Initial Report. I omit the now-stale 2015 actuals data published in my Initial Report, and now calculate the 4-year CAGR for 2016-2020, as opposed to the 5-year CAGR for 2015-2020 as I did in the Initial Report. As discussed in more detail later in this section, currently a few of the analysts have forecasts that extend to 2021, but there are too few of such forecasts to make them statistically relevant.

[222] As discussed in my Initial Report, Section II.E.3.a, Thomson One tracks forecasts for certain key financial metrics and prepares the consensus estimate. Because ending subscribers are of particular interest with regard to Sirius XM and a consensus estimate was not available from Thomson One for this metric, I constructed it manually relying on the same analyst reports and same methodology used by Thomson One.

Additionally, the February 2017 consensus estimate for ending subscribers excludes data from two previously included firms, Macquarie Research and Morgan Stanley, because those analysts stopped publishing ending subscribers estimates in their research reports so the most recently available information in the public domain is stale.

Figure 32: Difference in Wall Street analysts' estimate of Sirius XM's ending subscribers between October 2016 consensus and February 2017 consensus, in millions

Ending subscribers	2016 (A/E)[223]	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR[224]
October 2016 consensus	31.382	32.811	34.075	35.442	36.617	3.9%
February 2017 consensus	31.346	32.710	33.919	34.744	35.662	3.3%
Difference	(0.036)	(0.100)	(0.156)	(0.699)	(0.955)	-0.7%
% Difference	-0.1%	-0.3%	-0.5%	-2.0%	-2.6%	

Source: Thomson One.

(187) Next, Figure 33 shows that the current Wall Street consensus estimate for total revenue has softened by approximately 1% in 2020 but still rounds to $6.2 billion, resulting in a strong 5.3% CAGR between 2016 and 2020. The February 2017 revenue consensus incorporates data for one new investment firm, BTIG.

Figure 33: Difference in Wall Street analysts' estimate of Sirius XM's Total revenue between October 2016 consensus and February 2017 consensus, in millions

Total revenue	2016 (A/E)	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR
October 2016 consensus	$4,998	$5,314	$5,635	$5,927	$6,245	5.7%
February 2017 consensus	$5,017	$5,351	$5,659	$5,961	$6,177	5.3%
Difference	$20	$37	$23	$34	-$68	-0.4%
% Difference	+0.4%	+0.7%	+0.4%	+0.6%	-1.1%	

Source: Thomson One.

(188) Wall Street analysts' estimate of Sirius XM's EBITDA has improved since October, with an updated CAGR of 7.3% compared to 7.5% four months ago, and 2020 EBITDA of $2.5 billion, as seen in Figure 34.

Figure 34: Difference in Wall Street analysts' estimate of Sirius XM's EBITDA between October 2016 consensus and February 2017 consensus, in millions

EBITDA	2016 (A/E)	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR
October 2016 consensus	$1,821	$1,991	$2,159	$2,289	$2,434	7.5%
February 2017 consensus	$1,876	$2,030	$2,199	$2,349	$2,486	7.3%
Difference	$55	$40	$40	$60	$52	-0.2%
% Difference	+3.0%	+2.0%	+1.8%	+2.6%	+2.1%	

Source: Thomson One.

223 In Figure 32-36, 2016 values are estimates in the October 2016 consensus and actuals in the February 2017 consensus.

224 In Figure 32-36, CAGR equals four-year CAGR between 2016 (estimate for the October 2016 consensus; actuals for the February 2017 consensus) and 2020.

(189) Figure 35 shows a decline in the Wall Street consensus estimate of Sirius XM's free cash flow per share. As discussed later in the report, this was primarily driven by the addition of one new estimate since October 2016 from an "undisclosed" analyst to the Thomson One consensus summary which was more conservative than the other forecasts.

Figure 35: Difference in Wall Street analysts' estimate of Sirius XM's free cash flow per share between October 2016 consensus and February 2017 consensus

Free cash flow per share	2016 (A/E)	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR
October 2016 consensus	$0.30	$0.33	$0.39	$0.36	$0.42	8.8%
February 2017 consensus	$0.30	$0.34	$0.40	$0.34	$0.37	4.7%
Difference	$0.00	$0.01	$0.01	-$0.02	-$0.06	-4.1%
% Difference	+1.3%	+1.5%	+2.6%	-5.6%	-13.1%	

Source: Thomson One.

(190) Finally, as shown in Figure 36, the February 2017 consensus shows a slight slowdown in Sirius XM's expected net income growth, which nonetheless maintains a strong pace of growth at a 9.0% CAGR and a 2020 level of over $1 billion. The February 2017 net income consensus incorporates data for one new investment firm, BTIG.

Figure 36: Difference in Wall Street analysts' estimate of Sirius XM's net income between October 2016 consensus and February 2017 consensus, in millions

Net Income	2016 (A/E)	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR
October 2016 consensus	$705	$794	$886	$1,000	$1,110	12.0%
February 2017 consensus	$746	$801	$888	$993	$1,052	9.0%
Difference	$41	$6	$2	-$7	-$58	-3.0%
% Difference	+5.8%	+0.8%	+0.3%	-0.7%	-5.2%	

Source: Thomson One.

IV.B.2. Forecasted Performance

(191) In the remainder of this section I provide a deeper look at both the internal (*i.e.*, Sirius XM's) and the external (*i.e.*, Wall Street analysts') forecasts of each of the individual line items, including year-over-year growth.

(192) There are several key takeaways from this analysis. First, [[redacted]] As an example, Figure 37 compares the two versions of forecasts (the original, as of my Initial Report, and the most current) from internal and external sources. The

figure shows that, [[redacted]]

Figure 37: Comparison of two sets of internal and external forecasts, using ending subscribers as an example, in millions [RESTRICTED]

[redacted]

(193) Even more importantly, there is no substantive change from the data I used in my Initial Report. Both internal and external forecasters are predicting [[redacted]]

IV.B.2.a. Subscribers

(194) I start by reviewing the forecasts of total (ending) subscribers. This information is not tracked by Thomson One. Accordingly, for the external estimate I manually collected the data from the analyst reports identified by Thomson One as comprising the set from which they report revenue, EBITDA and net income estimates.

(195) Figure 38 presents the internal and external forecasts of ending subscribers. (I present more detail on the external estimate, including forecast values by individual analysts in Appendix B, Figure 71.)

Figure 38: Internal and external forecasts of Sirius XM's Ending Subscribers, 2016-2020, in thousands [RESTRICTED] [225]

[redacted]

(196) The graph in Figure 39 compares Sirius XM's historical ending subscribers with the internal and external forecasts through 2020.

[225] This figure updates Figure 49 from my Initial Report.

Figure 39: Sirius XM's historical and forecasted Ending Subscribers, 2006-2020, in million [RESTRICTED]

[redacted]

IV.B.2.b. Revenue

(197) Next, I analyze the internal and external forecasts of Sirius XM's total revenue in Figure 40. (I present more detail on the external estimate, including forecast values by individual analyst in Appendix B, Figure 72.)

Figure 40: Internal and external forecasts of Sirius XM's Total revenue, 2016-2020, in $ million [RESTRICTED] [226]

[redacted]

[226] This figure updates Figure 51 from my Initial Report.

(198) The graph in Figure 41 compares Sirius XM's historical revenue with internal and external forecasts through 2020.

Figure 41: Sirius XM's historical and forecasted Total revenue, 2006-2020, in $ million [RESTRICTED] [227]

[redacted]

IV.B.2.c. EBITDA

(199) Next, I analyze the internal and external forecasts of Sirius XM's Adjusted EBITDA in Figure 42. (I present more detail on the external estimate, including forecast values by individual analysts in Appendix B, Figure 73.)

[227] This figure updates Figure 52 from my Initial Report.

Figure 42: Internal and external forecasts of Sirius XM's Adjusted EBITDA, 2016-2020, in $ million [RESTRICTED] [228]

[redacted]

(200) The graph in Figure 43 compares Sirius XM's historical Adjusted EBITDA with internal and external forecasts through 2020.

Figure 43: Sirius XM's historical and forecasted Adjusted EBITDA, 2006-2020, in $ million[229] **[RESTRICTED]**

[redacted]

[228] This figure updates Figure 53 from my Initial Report.

[229] This figure updates Figure 54 from my Initial Report.

IV.B.2.d. Free cash flow

(201) Next, I analyze the internal and external forecasts of Sirius XM's free cash flow per share in Figure 44. (I present more detail on the external estimate, including forecast values by individual analysts in Appendix B, Figure 74.)

Figure 44: Internal and external forecasts of Sirius XM's free cash flow per share, 2016-2020 [RESTRICTED] [230]

[redacted]

(202) The graph in Figure 45 compares Sirius XM's historical free cash flow per share with internal and external forecasts through 2020.

[230] This figure updates Figure 55 from my Initial Report.

Figure 45: Sirius XM's historical and forecasted Free cash flow per share, 2009-2020[231] [RESTRICTED]

[redacted]

IV.B.2.e. Net Income

(203) Finally, I analyze the internal and external forecasts of Sirius XM's net income in Figure 46. (I present more detail on the external estimate, including forecast values by individual analyst in Appendix B, Figure 75.)

[231] This figure updates Figure 56 from my Initial Report. Free cash flow per share is only presented in the post-merger period, starting with 2009. Prior to the merger the free cash flow was earned by two distinct companies with different capital structures and thus number of shares outstanding. Therefore, a computation of a "per share" free cash flow would be misleading.

Figure 46: Internal and external forecasts of Sirius XM's Net income, 2016-2020, in $ million[232] [RESTRICTED]

[redacted]

(204) The graph in Figure 47 compares Sirius XM's historical net income with internal and external forecasts through 2020.

Figure 47: Sirius XM's historical and forecasted Net income, 2006-2020, in $ million [RESTRICTED][233]

[redacted]

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[232] This figure updates Figure 57 from my Initial Report.

[233] This figure updates Figure 58 from my Initial Report.

IV.B.3. Updated Ability To Pay Analysis

(205) In this section I update my analysis of the effect of SoundExchange's proposed royalty rates on Sirius XM's forecasted performance.[234]

(206) Because of the insufficient level of detail in the external forecast data, I am only able to perform this analysis using Sirius XM's own internal forecast. Analyst reports do not disclose the underlying royalty rate assumption so it is impossible to make the adjustment. While Sirius XM's internal forecast also does not explicitly disclose what royalty rate is assumed, there is sufficient detail in the spreadsheets that allows me to deduce the royalty rates and estimate the impact of raising them. I utilize the same 4-step process described in more detail in my Initial Report.

(207) Sirius XM does not disclose the SDARS royalty rate that it assumed when preparing the [[redacted]]. I can estimate that value by triangulating known information: namely, I can calculate an approximation of the SDARS royalty rate that I call a "reference rate" and then compare that reference rate to a known SDARS royalty rate. Because the 2017 SDARS rate was prescribed by CRB regulations in *SDARS II* at 11%, I assume that Sirius XM appropriately modeled that it would be paying SDARS royalties at that level during 2017. Thus I can compare my relative reference rate to a known "real" royalty rate in order to ascertain future rates beyond 2017 imbedded in Sirius XM's [[redacted]].

(208) As a first step, I calculate the SDARS share of the line item "Programming royalties," based on 2015 actuals, as seen in Figure 48. This is necessary because, as I described in the Initial Report, this line item includes other royalties that are not relevant here.[235] I apply the same methodology here, with the additional step of normalizing Programming royalties actuals to remove the one-time (2015) impact of the pre-72 settlement.

[234] *See* Initial Report, Section II.E.4.

[235] *See* Initial Report, Figure 83.

Figure 48: Calculating SDARS share of Sirius XM's programming royalties in most recent actuals (2015), in millions [RESTRICTED]

[redacted]

Source: Lys analysis, [[redacted]].

(209) My analysis shows that, in 2015, approximately [[redacted]] of Sirius XM's royalty payments were for SDARS royalties, compared to [[redacted]] based on 2014 data, which I calculated in the Initial Report.[239] In the absence of better directional information, I maintain the assumption that Sirius XM's forecast assumes this ratio will remain constant over time, meaning that for all years of the Sirius XM long-term forecast SDARS royalties represent the same [[redacted]] of total Programming royalties. Figure 49 shows the calculation of the SDARS royalties I assume are embedded in Sirius XM's long-term plan.

Figure 49: Calculation of assumed SDARS royalties embedded in the Sirius XM 2016 long-term plan, in millions [RESTRICTED][240]

[redacted]

Source: Lys analysis, [[redacted]].

(210) In Step 2, I calculate the reference royalty rate in order to analyze the underlying assumptions used by Sirius XM in preparing its long-term plan. This reference royalty rate is only used as a benchmark and is not informative as an absolute metric.

(211) The numerator for the calculation of the reference royalty rate is the SDARS royalties calculated in Step 1 (Figure 49, row B). The denominator is a measure of revenue to which such royalty rates would be applied—ideally, Gross Revenue defined in accordance with 37 CFR. However, because Sirius XM's [[redacted]] does not contain this metric I create a measure of revenue

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236 SoundExchange Ex. 143, SXM_DIR_00025989_RESTRICTED (Sirius XM Forecast – 2016 LRS plan).

237 Sirius XM, Annual Report for 2015 (Form 10-K), at 24 (Feb. 2, 2016).

238 Dec. 2015 Statement of Account to SoundExchange.

239 *See* Initial Report, ¶ 203.

240 This figure updates Figure 59 from my Initial Report.

that comes closest to approximating Gross Revenue and call this my "reference" revenue. My goal is to define reference revenue as close as possible to SDARS revenue, utilizing all available information from the Sirius XM [[redacted]]. Consequently, for this analysis I define reference revenue as subscription revenue (non-telematics), plus the U.S. Music Royalty Fee, reduced by the excludable revenues under 37 CFR, which would not be subject to SDARS royalty rates. Details of this calculation appear in Appendix A, in Figure 68-Figure 70, and the results are presented below in Figure 50.

Figure 50: Reference royalty rate in Sirius XM's [[redacted]] [RESTRICTED] [241]

[redacted]

Source: [[redacted]].

(212) As a result of the data-driven imprecisions of these calculations (in both the numerator and the denominator), I only use them directionally to infer what SDARS royalty rates Sirius XM is forecasting in future periods relative to "anchored" royalty rates in periods for which the SDARS royalty rates are known (such as the 11% level in 2017).

(213) The key finding from Figure 50 remains unchanged: This analysis indicates that [[redacted]

241 This figure updates Figure 60 from my Initial Report.

[redacted].

(214) Next, in Step 3 I calculate the Adjustment ratio that connects the Reference royalty rate to a known anchor such as the 2017 statutory SDARS royalty rate. I assume that Sirius XM modeled 2017 SDARS royalty rates at the *SDARS II* rate of 11%. Because my model shows a 2017 Reference royalty rate of [[redacted]], that means I need to use an adjustment ratio of [[redacted]][242] to tie my Reference rate to the actual SDARS rate found in the forecast. Put differently, real-world observations about royalty rates can be incorporated in the Sirius XM [[redacted]] by scaling them [[redacted]]. [[redacted]].

(215) In the final Step 4, I calculate the incremental impact of raising the SDARS statutory royalty rates during the first four years of the *SDARS III* period (2018-21)[243] from [[redacted]] (which I have established is the likely level embedded in the Sirius XM long-term plan) to the maximum SoundExchange proposed royalty level of 24%.

(216) To do this I first establish that a royalty level of 24.0% is [[redacted]] times larger than a royalty level of [[redacted]][244] and the incremental impact of the increase is [[redacted]] times. Put differently, if royalties were $100 under an [[redacted]] regime, they would be [[redacted]] under a 24.0% royalty regime, which means that the incremental impact is [[redacted]].

(217) However, to apply the real-world royalty rates to the model, I need to scale them down by the adjustment ratio discussed in Step 3 (because I only know the approximate, or reference, royalty rates, used in the model).

(218) My calculations are presented in Figure 51.

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242 [[redacted]] = 11.00% [statutory rate] / [[redacted]]

243 [[redacted]]

244 [[redacted]]

Figure 51: Calculation of the incremental impact of raising the SDARS royalty assumption rate in Sirius XM's [[redacted]] to 24% ($ in millions)[245] [RESTRICTED]

[redacted]

(219) My analysis shows that raising the statutory SDARS royalty rates in *SDARS III* to the maximum level proposed by SoundExchange would have an incremental after-tax impact of between [[redacted]]. These results are slightly reduced compared to the analysis in my Initial Report based on the [[redacted]]. However, they do not alter my overall conclusion. Sirius XM is expecting to perform so well in the future that it could easily absorb the maximum SoundExchange-proposed SDARS royalty rate of 24% (for the *SDARS III* period, 2018-2022). The following charts demonstrate that Sirius XM would remain highly profitable in this scenario.

(220) Figure 52 utilizes Sirius XM's [[redacted]] and shows the amount of adjusted EBITDA the company would earn assuming that, beginning in 2018, it was obligated to pay SDARS royalties at SoundExchange's proposed maximum royalty rate of 24%. Under this scenario Sirius XM would earn between [[redacted]] in EBITDA in every year of the forecast, and would continue growing.

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245 This figure updates Figure 61 from my Initial Report.

246 *See* Figure 49, row B.

247 *See* Figure 70.

Figure 52: Sirius XM's [[redacted]] for Adjusted EBITDA assuming SDARS royalties at 24%, in $ million [RESTRICTED] [248]

[redacted]

Source: [[redacted]].

(221) Figure 53 utilizes Sirius XM's [[redacted]] and shows the amount of net income the company would earn assuming that starting with 2018 it was obligated to pay SDARS royalties at SoundExchange's proposed maximum royalty rate of 24%. Under this scenario, Sirius XM would earn over [[redacted]] in net income each year of the forecast, and would continue growing.

248 This figure updates Figure 62 from my Initial Report.

Figure 53: Sirius XM's [redacted] for net income assuming SDARS royalties at 24%, in $ million [RESTRICTED] [249]

[redacted]

Source: [redacted].

(222) Finally, Figure 54 utilizes Sirius XM's [redacted] and shows the amount of free cash flow the company would earn, assuming that starting in 2018 it was obligated to pay SDARS royalties at SoundExchange's proposed maximum royalty rate of 24%. Under this scenario Sirius XM would generate over [redacted] in free cash flow almost every year of the forecast and would continue growing.[250]

[249] This figure updates Figure 63 from my Initial Report.

[250] [redacted]

Figure 54: Sirius XM's [[redacted]] for free cash flow assuming SDARS royalties at 24%, in $ million [RESTRICTED] [251]

[redacted]

Source: [[redacted]].

(223) In conclusion, Sirius XM's own internal forecasts show that, even under an SDARS royalty rate of 24%, it will remain extremely profitable during the *SDARS III* term (2018-22). I estimate that during the *SDARS III* term Sirius XM will [[redacted]] in EBITDA, [[redacted]] in net income, and [[redacted]] in free cash flow.[252]

(224) Furthermore, at the end of the forecasted period (2021) Sirius XM's 2016 LRS shows a strong balance sheet, with [[redacted]]

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[251] This figure updates Figure 64 from my Initial Report.

[252] Because the 2016 LRS Plan only extends through 2021, I make the very conservative assumption that 2022 performance will be equal to 2021—even though the internal forecast for 2015-21 assumes [[redacted]].

V. Rebuttal To Sirius XM's Case On The 801(B) Objectives – Relative Cost And Investment

(225) In this section I rebut Sirius XM's arguments regarding 801(b) objectives, including the supposedly extraordinary upcoming satellite infrastructure investments, and analyze the level of effective subsidies Sirius XM has received from the recording industry through the payment of below-market royalty rates.

V.A. Sirius XM's Satellite Investment

(226) Sirius XM claims that its significant future investments in satellite equipment should justify a lower SDARS royalty rate. In this section, I explain why these claims are economically meaningless.

(227) Prof. Shapiro's testimony notes that "the Judges have taken note of certain very substantial, long-term investments periodically required to be made by Sirius XM in order to sustain its operations. These include, prominently, the costs of launching new satellites."[253] Bridget Neville, Sirius XM's Vice President, Satellite and Terrestrial Engineering and Operations, quantified that investment at approximately [[redacted]] over the *SDARS III* period:

> "There are substantial costs associated with constructing and launching any satellite, including costs the Company incurs for construction, testing, launch, insurance, capitalized labor, and new ground equipment to support telemetry, tracking and command ("TT&C"), launch, and uplink. Our contract with SSL to build two new satellites exceeds [[redacted]] Additional launch vehicle, insurance, and other costs incremental to the manufacturing price are expected to drive the total cost to about [[redacted]], or [[redacted]] per satellite."[254]

(228) Prof. Shapiro cites the [[redacted]] expected future investment and describes it as "precisely the type of contribution that is pertinent to this 801(b)(1) objective."[255] However, these investments are an ordinary part of Sirius XM's business and there is nothing new or unique about them. Moreover, satellites are long-lived assets and their investments are "lumpy." Thus, a more appropriate way to view this is to look at the annual charge for satellite use as approximated by depreciation.

(229) Sirius XM can easily absorb the [[redacted]] satellite investment need. At the end of 2016 the company had $214 million in cash on hand, almost double the amount from year-end 2015.[256]

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253 Shapiro WDT, at 33.

254 Written Direct Testimony of Bridget Neville ("Neville WDT"), ¶20.

255 Shapiro WDT, at 13, 33.

256 Sirius XM, Annual Report for 2016 (Form10-K), at F-5 (Feb. 2, 2017).

And the [[redacted]] is miniscule in relation to just the most recent year's EBITDA of $1.9 billion, free cash flow of $1.5 billion, or net income of $746 million.[257] Furthermore, as I discussed in my Initial Report, under Sirius XM's stock buy-back program, launched during the *SDARS II* period (in 2013), the company has spent over $8 billion in cash on repurchasing its own stock—a non-essential financial investment more than **13 times** the size of is stated satellite investment needs.[258]

(230) Not surprisingly, earlier this month Sirius XM assured investors it will be able to cover its funding needs, including capital expenditures:

> "Based upon our current business plans, we expect to fund operating expenses, **capital expenditures**, including the construction of replacement satellites, working capital requirements, legal settlements, interest payments, taxes and scheduled maturities of our debt with existing cash, cash flow from operations and borrowings under our Credit Facility. As of December 31, 2016, **$1,360,000** was available for future borrowing under our Credit Facility. We believe that **we have sufficient cash and cash equivalents as well as debt capacity to cover our estimated short-term and long-term funding needs**, as well as fund stock repurchases, future dividend payments and strategic opportunities."[259]

(231) In fact, Sirius XM is so bullish about its balance sheet that it recently announced a dividend – another discretionary drain on cash. Consequently, an analyst for Macquarie Research opened a recent research report on the company with the observation that "[t]he introduction of a dividend and future products (Howard Stern video, 360L, telematics) is evidence of [Sirius XM's] FCF power. Our numbers go up to reflect another beat/raise/10Q review; **there's ample balance sheet capacity for both a ~US$200m/~US$2bn dividend/buyback p.a. with potential upside at 4x leverage.**"[260] Despite the introduction of a dividend and significant investments in new offerings,[261] analysts believe that Sirius XM's balance sheet has the capacity to absorb more stock buyback and additional leverage. The company's ability to afford a $600 million investment spread over 5 years—and yielding benefits over 15 years—is simply unquestionable.

(232) In discussing the future [[redacted]] satellite investment, Prof. Shapiro testified that "Sirius XM had no similar 'contribution' of this magnitude during the SDARS II license term."[262] However,

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[257] Sirius XM, Annual Report for 2016 (Form 10-K), at 31 and F-4.

[258] According to David Frear, "[t]his brings the total capital return to shareholders since launching our capital return program four years ago to more than $8 billion." Sirius XM Holdings (SIRI) Q4 2016 Results - Earnings Call Transcript, February 2, 2017.

[259] Sirius XM, Annual Report for 2016 (Form 10-K), at 34 (emphasis added).

[260] Macquarie Research, "Sirius XM Radio New Yield On The Block," October 27, 2017, at 1 (emphasis in original).

[261] Further detail on Sirius XM's R&D investments, specifically regarding its new 360L product (formerly known as SXM17), can be found at SoundExchange Ex. 145, [[redacted]], and SoundExchange Ex. 146, Jan. 7, 2016, [[redacted]].

[262] Shapiro WDT, at 33.

that does not appear to be accurate. Ms. Neville testified about previous investments of approximately [[redacted]] per satellite for the launch of FM-5 (2009) and FM-6 (2013, during *SDARS II*).[263] The cost to launch appears to be the same. The only difference is the timing of Sirius XM's replenishment needs, which are unevenly staggered. Sirius XM's [[redacted]] shows that between 2013 and 2017 (the *SDARS II* period) the company expected to make a [[redacted]] investment in satellite CapEx.[264]

(233) The expected level of future satellite investments is well known in the analyst community and evidence shows it is fully absorbed in the market's bullish estimates of Sirius XM's performance. In the 2016 10-K Sirius XM disclosed that it entered into agreements for the construction and launch of two new satellites in 2019 and 2020, consistent with the testimony of Ms. Neville and Prof. Shapiro.[265] Though the 10-K disclosure did not provide a price tag, it warned that the company "expect[s] to continue to incur significant costs to construct replacement satellites."[266] In the corresponding earnings call Sirius XM's CFO David Frear advised that the 2017 satellite CapEx will rise by approximately $50 million:[267]

> "Just with respect to 2017, we're anticipating that satellite CapEx will probably be up about $50 million from where it is in 2016. And then, the balance of the programs will occur 2018, 2019, and 2020."

(234) Analysts, therefore, were well aware of Sirius XM's satellite investment needs. For example, the January 9, 2017 analyst report from Wunderlich incorporates an even higher level of CapEx investment, as seen in Figure 55.

Figure 55: Wunderlich estimate of Sirius XM's CapEx investments

Figure 2 - SIRIUS XM Radio - Discounted Cash Flow Model

($ millions)	2015A	2016E	2017E	2018E	2019E	2020E
EBITDA	1,658	1,853	2,027	2,167	2,337	2,492
Capex	(135)	(182)	(250)	(225)	(325)	(250)

Source: Wunderlich, Sirius XM Holdings, January 9, 2017, at 5.

263 Neville WDT, ¶14.

264 SoundExchange Ex. 143, SXM_DIR_00025989_RESTRICTED.xlsx.

265 Sirius XM, Annual Report for 2016 (Form 10-K), at 4: "In 2016, we also entered into an agreement for the design and construction of two new satellites, SXM-7 and SXM-8, which we plan to launch into geostationary orbits in 2019 and 2020, respectively, as replacements for XM-3 and XM-4."

266 Sirius XM, Annual Report for 2016 (Form 10-K), at 34.

267 Sirius XM Holdings (SIRI) Q4 2016 Results - Earnings Call Transcript, February 2, 2017. Mr. Frear also advised that "the non-satellite CapEx will grow a little bit as well, but most of the increase will be captured in the $50 million."

(235) Wunderlich estimates that in the first three years of the *SDARS III* period (2018-20) Sirius XM CapEx investments will be $800 million. J.P Morgan independently reached the same conclusion on Sirius XM's capital needs and also includes $800 million in forecasted CapEx between 2018-20.[268] For those three years, Sirius XM's [[redacted]] assumes [[redacted]] in non-Satellite CapEx. Stripping this figure out of the Wunderlich estimate leaves [[redacted]] of Satellite CapEx over the first three years, or a run rate that would lead to a 5-year estimate of [[redacted]]. That is well above the [[redacted]] investment in satellite CapEx (spread over the same five year period) cited by Prof. Shapiro. These estimates indicate that Wunderlich expects Sirius XM to make significant investments in satellite, yet still maintains that Sirius XM will exhibit strong growth and profitability.

(236) Sirius XM's satellite investment needs are also fully incorporated into its [[redacted]] which I discussed at length in the previous section, and which shows ample profitability and capacity to support that investment—even at the SoundExchange 24% SDARS royalty rate proposal during the *SDARS III* period.

(237) The [[redacted]] assumes a [[redacted]] cash investment in satellite CapEx (and corresponding capitalized interest) between 2016-2021, as seen in Figure 56.

Figure 56: Sirius XM's satellite investment included in the [[redacted]] [RESTRICTED], in millions

[redacted]

(238) While it is impossible to determine the amount of investment during the *SDARS III* period (because the forecast ends in 2021 and does not include 2022), for only the first four years of the *SDARS III* period (2018-22) Sirius XM estimates a satellite CapEx investment of [[redacted]]. This figure is higher than the [[redacted]] investment cited by Ms. Neville and Prof. Shapiro. I conclude that the internal forecast fully absorbs the company's satellite investment needs.

(239) Furthermore, while the testimony of Sirius XM's witnesses implies there is something unique about the timing of large lumpy investments in the near future, this is misleading. Throughout its history, Sirius XM has had to manage the need for periodic large-scale capital investments, including in times when its financial position was not nearly as strong as it is today.

[268] SoundExchange Ex. 144, J.P. Morgan Report, at 6.

(240) As I described in the Initial Report, Sirius XM's satellites have been designed to last up to 15 years, which means that the company goes through cycles of investment needs.[269] As a result, the investments in satellites are "lumpy" and do not represent the actual usage of those satellites in any given year. Because of this characteristic, the annual depreciation of the satellites provides a better approach to measure how much satellites have contributed to Sirius XM's operations.

(241) Sirius XM's lumpy investments in satellites will not have a disproportionate impact on Sirius XM's income statements. Under accounting rules, the company will have to spread out the cash investment over the depreciable life of assets it is building. If a satellite costs [[redacted]] and has an estimated useful life of 15 years, Sirius XM would record a [[redacted]] cash outlay in year 1 (which affects the cash flow statement but not the income statement), and an annual $20 million[270] depreciation expense in years 1-15 (that flows to net income). Figure 57 shows the historical and future CapEx and Depreciation under Sirius XM's [[redacted]].

Figure 57: Sirius XM's CapEx and depreciation in the [[redacted]], in $ millions [RESTRICTED]

[redacted]

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[269] Initial Report, ¶80.

[270] $20 = $300 / 15.

(242) Finally, it is more informative to assess satellite investments as a percentage of revenue—as this puts them on the same footing as royalties. I note that Sirius XM's depreciation as a percentage of total revenue has been declining rapidly, from approximately [[redacted]]. Moreover, as depicted in Figure 58, that rate is expected to further decline to [[redacted]] by 2019, despite the increased satellite investments.

Figure 58: Sirius XM's historical and forecasted depreciation as a percentage of total revenue, per [[redacted]] [RESTRICTED]

[redacted]

(243) In summary, there is nothing extraordinary about Sirius XM's satellite investment needs of [[redacted]] over the next five years. This investment is expected by the market and incorporated in the company's forecasting. Sirius XM is creating enough earnings and cash flow to easily absorb this investment and has in fact chosen to make far greater discretionary outlays on dividends and stock repurchases. Under these circumstances, granting special consideration to Sirius XM (through reduced SDARS rates) will amount to nothing less than a transfer of wealth from artists and labels to Sirius XM shareholders.

V.B. Historical Recording Industry Contributions To Sirius XM

(244) As discussed in my Initial Report, although in *SDARS I* the Judges determined that the most strongly supported market rate for SDARS royalties should be 13% of revenue, for a variety of reasons they granted Sirius XM (temporary) relief from those rate levels.[271] The original rates, set at the 6% level, have slowly increased to the 11% level in 2017. However, they have still not caught up to "the upper boundary most strongly indicated by marketplace data" identified by the Judges more than a decade ago.[272] From an economic standpoint, this means that SoundExchange[273] has subsidized Sirius XM's growth by receiving below-market rates. In this section I quantify the impact of that subsidy.

(245) In Figure 59, I calculate the amount of the subsidy in nominal terms (that is, without adjusting for the time value of money) at more than [[redacted]].

Figure 59: Nominal SoundExchange subsidy to Sirius XM, 2007-16, in $ millions [RESTRICTED]

[redacted]

(246) I start with the gross revenues that Sirius XM has reported to SoundExchange in column A, apply to it the prevailing SDARS royalty rate (B) and show the actual amount of royalties received (C). In column D I recalculate the royalties using the rate of 13% (indicated by the Judges as the upper boundary most strongly indicated by marketplace data). In column E, I present the amount of the

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271 Initial Report, Section II.D.1; *see SDARS I*, at 4097.

272 *SDARS I*, at 4097.

273 For simplicity, I refer to SoundExchange as the subsidizing party. In reality, the labels and artists are the ones who ultimately received lower royalty payments and in fact subsidized Sirius XM.

subsidy, defined as the difference between market-level royalties and actual royalties received by SoundExchange.[274] Utilizing all available data spanning from 2007 through the first half of 2016, my analysis shows that over the past decade SoundExchange has provided more than [[redacted]] in nominal subsidies to Sirius XM.

(247) However, this nominal [[redacted]] in subsidies is understated because it does not account for the time value of money—the elementary concept in finance that says that a dollar earned today is more valuable than a dollar tomorrow. Put differently, $1 in subsidies from a decade ago would be worth more than $1 today. Artists and record companies would not have simply put that $1 in their wallet for safekeeping but would have invested it. I offer several alternatives for estimating the value of the historical subsidy in today's terms.

(248) First, in Figure 60, I show the value of the historical subsidy brought to present terms by increasing it for inflation. This is the most conservative approach because it simply protects SoundExchange from the destruction in value of its original "investment" and does not allow for any kind of an investment. Put differently, this approach simply assures that SoundExchange could buy the same number of widgets today as it could have a decade ago, when it originally made the first part of its subsidy. This analysis shows that, in today's dollars, rights-holders' subsidy of Sirius XM is worth more than [[redacted]].

Figure 60: SoundExchange's inflation-adjusted subsidy to Sirius XM, in $ millions [RESTRICTED]

[redacted]

[274] As discussed in my Initial Report, at Section II.D.1, in *SDARS I* the Judges determined that the "interactivity adjusted benchmark of $1.40 per subscriber per month is the equivalent of 13% on a percentage of subscriber revenue basis." *SDARS I*, at 4093-94.

(249) Next, in Figure 61, I calculate the future value of SoundExchange's historical subsidy assuming a constant 5% annual return. This analysis assumes that, at the end of each year of the subsidy period (the most conservative approach), SoundExchange invested the amount of the subsidy and received a 5% annual return. I selected the 5% return based on a review of senior notes issued by Sirius XM since 2013, which have paid interest rates of between 4.25% and 6.00%.[275] This analysis shows that, had SoundExchange loaned Sirius XM money by purchasing bonds from Sirius XM with a constant 5% annual rate of return, today those investments would be worth more than [[redacted]].

Figure 61: Value of SoundExchange's subsidy to Sirius XM assuming 5% annual return on investment, in $ millions [RESTRICTED]

[redacted]

(250) Next, in Figure 62, I assume that instead of receiving a constant 5% return on investment from the purchase of Sirius XM notes or other debt instruments, SoundExchange instead invested in the equity market, as measured by the S&P 500 index. I maintain my conservative approach of assuming the investments were made at the end of each year. This analysis shows that, had SoundExchange been investing its annual subsidies in the S&P 500 index, today those investments would be worth more than [[redacted]].

[275] In 2012 Sirius XM offered Senior Notes at a coupon rate of 5.25%. In 2013, Sirius XM offered Senior Notes with coupon rates of 5.875%, 5.75%, 4.625%, and 4.25%. In 2014, Sirius XM offered Senior Notes with coupon rates of 6.00%. In 2015 and 2016, Sirius XM offered Senior Notes with coupon rates of 5.375%. *See* Sirius XM Holdings, Inc., Annual Report for 2016 (Form 10-K), at F-22.

Figure 62: Value of SoundExchange's subsidy to Sirius XM assuming reinvestment in S&P 500 index, in $ millions [RESTRICTED]

[redacted]

(251) Finally, I also analyzed the subsidy from the standpoint of Sirius XM. If Sirius XM was indeed cash-constrained as it claimed in the *SDARS I* and *SDARS II* proceedings, then, absent the royalty rate reduction due to the 801(b) factors, it would have had to resort to what companies typically do in such a situation: issue stock. Indeed, a company's stock is its financing of "last resort."

(252) Thus, absent the royalty rate concessions offered by the Judges in *SDARS I* and *SDARS II*, Sirius XM could have settled the difference between the rate it actually paid and the market value of the royalty rights as established by the Judges by either

a) paying SoundExchange in stock; or, more realistically,

b) raising additional cash by issuing stock to third parties and paying the full market value to SoundExchange.

(253) Either way, this issuance of additional stock would have resulted in diluting the equity and reducing the value of the equity owned by the current shareholders. To show how much copyright owners have contributed to the current market capitalization of Sirius XM, I run the following thought experiment: Assume that at each year end, Sirius XM raises additional monies equaling exactly the amount of the subsidy. The proceeds are then paid to SoundExchange, thus leaving the year-end market capitalization of Sirius XM unchanged.

[276] On December 31 of each year. In 2011 and 2016 markets were closed on December 31 so I take the value from the most recent preceding trading day, which was December 30.

(254) I describe the details of this methodology in Appendix C, and the calculations are presented in Figure 76. I conclude that, by December 2016, the 801(b) factors had cumulatively contributed 33% to the market capitalization of Sirius XM.[277] Put differently, absent the 801(b) factors, existing shareholders' wealth would have been lower by [[redacted]]. Thus, the 801(b) factors increased existing shareholders wealth by approximately almost a half.[278]

(255) In conclusion, in Figure 63, I summarize the value of SoundExchange's subsidy of Sirius XM under various investment approaches.

Figure 63: Summary of various computations of the SoundExchange subsidy to Sirius XM between 2007-16, in $ millions [RESTRICTED]

[redacted]

(256) I note that the amount of monies that the artists and labels invested in Sirius XM as computed by each of these methodologies far exceed Sirius XM's stated planned CapEx investments of [[redacted]] over the *SDARS III* period. Thus, SoundExchange's historical subsidies have already more than compensated Sirius XM for this investment need. Accepting Sirius XM's estimate that each satellite costs [[redacted]],[279] my analysis shows that SoundExchange has already paid for between [[redacted]] (nominal subsidy), [[redacted]] (subsidy reinvested in S&P 500 index), and [[redacted]] (subsidy paid in Sirius XM stock).

VI. Conclusion

(257) My conclusions can be summarized as follows:

a) Nothing in the reports of the Sirius XM witnesses leads me to revise any of the conclusions reached in my Initial Report.

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277 [[redacted]].

278 [[redacted]].

279 Neville WDT, ¶20.

b) Specifically, as stated in my Initial Report, the royalty rate in the direct licenses provides no insights into the market value of the royalty rights that would have been negotiated in the absence of the statutory license.

c) The model used by professor Shapiro in support of his assertion that the statutory rate serves as a "magnet pulling the direct license rate up" assumes what it purports to show and is thus fundamentally flawed.

d) There is no evidence in the record that steering contributed in any meaningful way to the setting of the direct license rate. To the contrary, [[redacted]]

e) Finally, by December 31, 2016, the rate reductions from what the *SDARS I* Judges termed "the upper boundary most strongly indicated by marketplace data" over the period 2007-2016 contributed approximately one third to the market capitalization of Sirius XM.

Appendix A. Additional Tables

Figure 64: Over-indexing pitches by Sirius XM to certain direct licensed independent labels outside of the Top 30 [RESTRICTED]

[redacted]

[280] SoundExchange Ex. 147, [[redacted]], at SXM_DIR_00056317.

[281] SoundExchange Ex. 148, [[redacted]], at SXM_DIR_00067146.

[282] SoundExchange Ex. 149, [[redacted]], at SXM_DIR_00045691.

[283] SoundExchange Ex. 150, [[redacted]], at SXM_DIR_00041405.

[284] SoundExchange Ex. 151, [[redacted]], at SXM_DIR_00051607; *see also* SoundExchange Ex. 152, [[redacted]

Figure 65: Artists' share pitches by Sirius XM to Top 30 direct licensed independent labels [RESTRICTED]

[redacted]

[redacted]], at SXM_DIR_00090434.

285 SoundExchange Ex. 131, [[redacted]], at SXM_DIR_00085054; SoundExchange Ex. 153, [[redacted]], at SXM_DIR_00084842.

286 SoundExchange Ex. 74, [[redacted]].

287 SoundExchange Ex. 83, [[redacted]], at SXM_DIR_00037545.

288 SoundExchange Ex. 154, [[redacted]], at SXM_DIR_00054443.

289 SoundExchange Ex. 155, [[redacted]], at SXM_DIR_00060821-22.

Figure 66: Artists' share pitches by Sirius XM to certain direct licensed independent labels outside of the Top 30 [RESTRICTED]

[redacted]

[290] SoundExchange Ex. 156, [[redacted]], at SXM_DIR_00038525.

[291] SoundExchange Ex. 157, [[redacted]], at SXM_DIR_00050634.

Figure 67: Administrative fee pitches by Sirius XM to Top 30 direct licensed independent labels [RESTRICTED]

[redacted]

292 SoundExchange Ex. 158, [[redacted]], at SXM_DIR_00059016.

293 SoundExchange Ex. 74, [[redacted]].

294 SoundExchange Ex. 101, [[redacted]], at SXM_DIR_00051891.

295 SoundExchange Ex. 83, [[redacted]], at SXM_DIR_00037536.

296 SoundExchange Ex. 154, [[redacted]], at SXM_DIR_00054443.

297 SoundExchange Ex. 159, [[redacted]].

298 SoundExchange Ex. 108, [[redacted]], at SXM_DIR_00058424-25.

299 SoundExchange Ex. 155, [[redacted]], at SXM_DIR_00060821.

300 SoundExchange Ex. 160, [[redacted]].

Figure 68: Computation of the reference revenue percentage, based on 2015 data [RESTRICTED] [301]

[redacted]

Source: [[redacted]].

Figure 69: Computation of Reference revenue in Sirius XM's [[redacted]] [RESTRICTED], in millions[303]

[redacted]

Source: [[redacted]].

[301] This figure updates Figure 80 from my Initial Report.

[302] Excludes direct license and pre-72 revenue, estimated based on share of performances.

[303] This figure updates Figure 81 from my Initial Report.

[304] As calculated in Figure 68.

Figure 70: Computation of Reference royalty rate in Sirius XM's [[redacted]] [RESTRICTED], in millions [305]

[redacted]

[305] This figure updates Figure 82 from my Initial Report.

Appendix B. Additional Detail On Thomson One Data

(258) Thomson One provides details behind the consensus estimates for revenue, EBITDA and net income. This information is presented separately by line item and year, and shows each of the tracked individual estimates, by analyst. I cross-checked the data collected and summarized by Thomson One against the underlying analyst reports. Due to various contractual restrictions, Thomson One withholds the names of some of the financial institutions from which it collects estimates, and those are displayed as "UNDISCLOSED."

(259) In general, the individual analysts whose reports are included in Thomson One's consensus calculations are identical between the October 2016 set used in my Initial Report and the February 2017 set used in this report. One exception is the inclusion of a new investment firm, BTIG, in the estimates for subscribers, revenue and net income. Additionally, the free cash flow calculations include one additional undisclosed institution. Some of the institutions have extended forecasts that go further into the future in the February 2017 set compared to the October 2016 set.

(260) Figure 71 presents the consensus analyst forecast for ending subscribers. As discussed, I have added a forecast for ending subscribers from one new investment firm (BTIG) that started covering Sirius XM subsequent to the publication of my Initial Report. I have eliminated the forecasts of Sirius XM's ending subscribers from two investment firms, Macquarie Research[306] and Morgan Stanley,[307] because they stopped publishing details on ending subscribers in their recent analyst reports and the forecasts available in the public domain are stale.

Figure 71: Consensus forecast of Sirius XM's ending Subscribers, 2016-2020, in thousands, as of February 2017

In thousands	Date	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR 2016-20
BARCLAYS	2-Feb-17	32,943	34,333	n/a	n/a	n/a
BARRINGTON RESEARCH	1-Nov-16	32,528	34,430	n/a	n/a	n/a
BTIG	21-Nov-16	33,053	34,562	35,900	n/a	n/a
DEUTSCHE BANK RESEARCH	3-Feb-17	32,816	33,831	34,555	n/a	n/a
EVERCORE ISI	2-Feb-17	32,750	33,919	34,932	35,821	3.4%
GABELLI & COMPANY	28-Oct-16	32,269	33,341	34,416	35,503	3.2%
JPMORGAN	2-Feb-17	32,757	n/a	n/a	n/a	n/a
PIVOTAL RESEARCH GROUP	28-Oct-16	32,478	33,460	34,216	34,747	2.6%
RBC CAPITAL MARKETS	2-Feb-17	32,654	33,699	n/a	n/a	n/a
WUNDERLICH SECURITIES, INC.	9-Jan-17	32,670	33,958	35,103	36,113	3.6%
MEAN		32,692	33,948	34,854	35,546	3.2%
MEDIAN		32,710	33,919	34,744	35,662	3.3%
Median growth		4.4%	3.7%	2.4%	2.6%	
# analysts		10	9	6	4	

Source: Thomson One.

[306] Macquarie stopped publishing its subscriber forecast after the April 28, 2016 report. No subscriber information is found in Macquarie's subsequent reports published on February 2, 2017, October 27, 2016, September 21, 2016, August 30, 2016, July 26, 2016, and May 12, 2016.

[307] Morgan Stanley stopped publishing its subscriber forecast after the July 27, 2016 report. No subscriber information is found in Morgan Stanley's subsequent reports published on February 2, 2017, January 5, 2017 and October 27, 2016.

(261) Next, I analyze the consensus estimate forecast for Sirius XM's Adjusted EBITDA in Figure 72. In addition to the data shown, three institutions (Evercore ISI, Gabelli & Company and an "undisclosed") also have Adjusted EBITDA estimates for 2021, with a median forecast of $2,607 (million).

Figure 72: Consensus forecast of Sirius XM's total revenue, 2016-2020, in $ million, as of February 2017

In $ million	Date	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR 2016-20
BARRINGTON RESEARCH	3-Feb-17	$5,320	$5,682	$6,143	n/a	n/a
BTIG	22-Nov-16	$5,370	$5,699	n/a	n/a	n/a
EVERCORE ISI	5-Feb-17	$5,386	$5,703	$5,954	n/a	n/a
FBR CAPITAL MARKETS & CO.	7-Feb-17	$5,377	$5,657	$5,903	$6,155	5.2%
GABELLI & COMPANY	3-Feb-17	$5,350	$5,638	$5,914	$6,177	5.3%
MACQUARIE RESEARCH	3-Feb-17	$5,352	$5,685	$6,008	n/a	n/a
PACIFIC CREST SECURITIES-KBCM	2-Feb-17	$5,353	$5,619	n/a	n/a	n/a
PIPER JAFFRAY	31-Oct-16	$5,269	$5,562	n/a	n/a	n/a
PIVOTAL RESEARCH GROUP	2-Feb-17	$5,321	$5,751	$6,113	$6,465	6.5%
WUNDERLICH SECURITIES, INC.	9-Jan-17	$5,315	$5,641	$5,967	$6,283	5.8%
UNDISCLOSED[308]	n/a	$5,362	$5,660	$6,059	$6,117	n/a
UNDISCLOSED	n/a	$5,382	$5,737	$5,868	n/a	n/a
UNDISCLOSED	n/a	$5,344	$5,632	$5,748	n/a	n/a
UNDISCLOSED	n/a	$5,338	$5,583	$5,907	n/a	n/a
UNDISCLOSED	n/a	$5,346	$5,640	$5,998	n/a	n/a
UNDISCLOSED	n/a	$5,362	$5,666	n/a	n/a	n/a
UNDISCLOSED	n/a	$5,330	$5,630	n/a	n/a	n/a
UNDISCLOSED	n/a	$5,429	5,769	n/a	n/a	n/a
MEAN		$5,350	$5,664	$5,965	$6,239	5.6%
MEDIAN		$5,351	$5,659	$5,961	$6,177	5.3%
Median growth		6.6%	5.8%	5.3%	3.6%	
# analysts		18	18	12	5	

Source: Thomson One.

308 As discussed, due to contractual limitations Thomson One lists some analyst estimates as coming from an UNDISCLOSED source. Due to the nature of how Thomson One reports the data it is impossible to verify whether the UNDISCLOSED entries belong to the same institution and each UNDISCLOSED row should not be thought of as an individual forecast. Therefore, I do not provide a CAGR for UNDISCLOSED rows because it would not be meaningful.

(262) Next, I analyze the consensus estimate forecast for Sirius XM's Adjusted EBITDA in Figure 73. In addition to the data shown, three institutions (Evercore ISI, Gabelli & Company and an "undisclosed") also have Adjusted EBITDA estimates for 2021, with a median forecast of $2,607 (million).

Figure 73: Consensus forecast of Sirius XM's Adjusted EBITDA, 2016-2020, in $ million, as of February 2017

In $ million	Date	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR 2016-20
BARRINGTON RESEARCH	3-Feb-17	$2,030	$2,256	$2,677	n/a	n/a
EVERCORE ISI	7-Feb-17	$2,055	$2,253	$2,386	$2,537	7.8%
FBR CAPITAL MARKETS & CO.	7-Feb-17	$2,096	$2,236	$2,349	$2,461	7.0%
GABELLI & COMPANY	3-Feb-17	$2,032	$2,204	$2,365	$2,486	7.3%
MACQUARIE RESEARCH	3-Feb-17	$2,095	$2,270	$2,410	n/a	n/a
PACIFIC CREST SECURITIES-KBCM	6-Feb-17	$1,936	$2,048	n/a	n/a	n/a
PIPER JAFFRAY	31-Oct-16	$2,009	$2,195	n/a	n/a	n/a
WUNDERLICH SECURITIES, INC.	9-Jan-17	$2,027	$2,167	$2,337	$2,492	7.4%
UNDISCLOSED[309]	n/a	$2,050	$2,229	$2,415	$2,429	n/a
UNDISCLOSED	n/a	$2,054	$2,236	$2,303	n/a	n/a
UNDISCLOSED	n/a	$2,045	$2,190	$2,087	n/a	n/a
UNDISCLOSED	n/a	$1,912	$2,041	$2,302	n/a	n/a
UNDISCLOSED	n/a	$2,031	$2,150	$2,329	n/a	n/a
UNDISCLOSED	n/a	$1,961	$2,144	n/a	n/a	n/a
UNDISCLOSED	n/a	$2,028	$2,203	n/a	n/a	n/a
UNDISCLOSED	n/a	$2,027	$2,174	n/a	n/a	n/a
MEAN		$2,024	$2,187	$2,360	$2,481	7.2%
MEDIAN		$2,030	$2,199	$2,349	$2,486	7.3%
Median growth		8.2%	8.3%	6.8%	5.8%	
# analysts		16	16	11	5	

Source: Thomson One.

309 As discussed, due to contractual limitations Thomson One lists some analyst estimates as coming from an UNDISCLOSED source. Due to the nature of how Thomson One reports the data it is impossible to verify whether the UNDISCLOSED entries belong to the same institution and each UNDISCLOSED row should not be thought of as an individual forecast. Therefore, I do not provide a CAGR for UNDISCLOSED rows because it would not be meaningful.

(263) Next, I analyze the consensus estimate forecast for Sirius XM's free cash flow per share in Figure 74. In addition to the data shown, one institution (Evercore ISI) also has a free cash flow per share estimate for 2021 of $0.45.

Figure 74: Consensus forecast of Sirius XM's Free cash flow per share, 2016-2020, as of February 2017

In $	Date	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR 2016-20
BARRINGTON RESEARCH	3-Feb-17	$0.33	$0.45	$0.53	n/a	n/a
EVERCORE ISI	2-Feb-17	$0.23	$0.30	$0.34	$0.40	7.1%
FBR CAPITAL MARKETS & CO.	7-Feb-17	$0.35	$0.38	$0.29	$0.33	2.1%
PACIFIC CREST SECURITIES-KBCM	27-Oct-16	$0.33	n/a	n/a	n/a	n/a
PIPER JAFFRAY	26-Jul-16	$0.30	$0.36	n/a	n/a	n/a
WUNDERLICH SECURITIES, INC.	11-Nov-16	$0.34	$0.58	$0.38	$0.40	7.1%
UNDISCLOSED[310]	n/a	$0.35	$0.40	$0.34	$0.29	n/a
UNDISCLOSED	n/a	$0.38	$0.41	n/a	n/a	n/a
MEAN		$0.33	$0.41	$0.38	$0.36	4.0%
MEDIAN		$0.34	$0.40	$0.34	$0.37	4.7%
Median growth		10.2%	19.4%	-15.0%	7.4%	
# analysts		8	7	5	4	

Source: Thomson One.

[310] As discussed, due to contractual limitations Thomson One lists some analyst estimates as coming from an UNDISCLOSED source. Due to the nature of how Thomson One reports the data it is impossible to verify whether the UNDISCLOSED entries belong to the same institution and each UNDISCLOSED row should not be thought of as an individual forecast. Therefore, I do not provide a CAGR for UNDISCLOSED rows because it would not be meaningful.

(264) Finally, I analyze the consensus estimate forecast for Sirius XM's net income in Figure 75. No institutions have forecasts extending to 2021.

Figure 75: Consensus forecast of Sirius XM's Net income, 2016-2020, in $ million, as of February 2017

In $ million	Date	2017 (E)	2018 (E)	2019 (E)	2020 (E)	CAGR 2016-20
BARRINGTON RESEARCH	3-Feb-17	$822	$955	$1,202	n/a	n/a
BTIG	22-Nov-16	$776	$864	n/a	n/a	n/a
FBR CAPITAL MARKETS & CO.	7-Feb-17	$837	$884	$932	$975	6.9%
MACQUARIE RESEARCH	3-Feb-17	$864	$924	$964	n/a	n/a
PACIFIC CREST SECURITIES-KBCM	2-Feb-17	$808	$869	n/a	n/a	n/a
PIPER JAFFRAY	31-Oct-16	$778	$888	n/a	n/a	n/a
PIVOTAL RESEARCH GROUP	2-Feb-17	$780	$1,167	$1,344	$1,505	19.2%
WUNDERLICH SECURITIES, INC.	9-Jan-17	$827	$900	$979	$1,052	9.0%
UNDISCLOSED[311]	n/a	$866	$941	$1,007	n/a	n/a
UNDISCLOSED	n/a	$786	$855	$1,327	n/a	n/a
UNDISCLOSED	n/a	$932	$1,247	$865	n/a	n/a
UNDISCLOSED	n/a	$767	$841	$923	n/a	n/a
UNDISCLOSED	n/a	$793	$839	$1,026	n/a	n/a
UNDISCLOSED	n/a	$835	$954	n/a	n/a	n/a
UNDISCLOSED	n/a	$738	$828	n/a	n/a	n/a
UNDISCLOSED	n/a	$755	n/a	n/a	n/a	n/a
MEAN		$810	$930	$1,057	$1,177	12.1%
MEDIAN		$801	$888	$993	$1,052	9.0%
Median growth		7.3%	11.0%	11.8%	5.9%	
# analysts		16	15	10	3	

Source: Thomson One.

[311] As discussed, due to contractual limitations Thomson One lists some analyst estimates as coming from an UNDISCLOSED source. Due to the nature of how Thomson One reports the data it is impossible to verify whether the UNDISCLOSED entries belong to the same institution and each UNDISCLOSED row should not be thought of as an individual forecast. Therefore, I do not provide a CAGR for UNDISCLOSED rows because it would not be meaningful.

Appendix C. Calculation Of The Hypothetical Number Of Shares Issued By Sirius XM Over Time To Pay Market Royalty Rates

(265) In this appendix I detail my calculation of the number of shares issued by Sirius XM under the hypothetical scenario in which Sirius XM had been ordered to pay royalties at the *SDARS I* levels starting in 2007. For purposes of this computation, I assume that Sirius XM was cash constrained and did not have enough funds to be able to pay the market royalty rate as established by the Judges in *SDARS I*. Not being able to pay the full amount from its ongoing operations, Sirius XM would have been forced to do what companies normally do in such circumstances, namely issue additional capital.

(266) The basic assumption that guides the computation is the fact that raising additional funds and paying them to SoundExchange would have left Sirius XM's market capitalization unchanged. However, the additional shares would have diluted Sirius XM's stock price.

(267) I start with the formula for total market capitalization in period t (MC_t) which is simply the product of the market price of the stock (P_t) and the total number of shares outstanding (S_t).

$$MC_t = P_t \times S_t \tag{1}$$

(268) Basic finance theory implies that issuing additional equity and paying the proceeds immediately to SoundExchange does not affect the market capitalization because it leaves the underlying cash flows unchanged. This means that if a company issues new shares of stock, absent other relevant publicly disclosed information, the market price of the stock will fall by the same proportion in order to maintain a constant market capitalization. Consequently, incorporating the change in the number of shares outstanding (ΔS_t) and the post-issuance adjusted market price ($Padj_t$) into the calculation will still lead to the same market cap value.

$$MC_t = (S_T + \Delta S_t) \times Padj_t \tag{2}$$

(269) As discussed, the assumption in this hypothetical example is that Sirius XM would issue additional shares in order to raise the capital necessary to pay the difference between the actual royalty rates promulgated by *SDARS I* and the <u>market royalty rates</u> as determined by the Judges at the time of *SDARS I*. Mathematically, the number of new shares issued (ΔS_t) is calculated by dividing the subsidy amount (SUB_t) by the post-issuance adjusted stock price ($Padj_t$).

$$\Delta S_t = \frac{SUB_t}{Padj_t} \tag{3}$$

(270) It is important to note that the number of shares issued is determined not by the market price at the time of issuance, but rather the expected (and under financial theory, realized) stock price that would occur immediately upon the issuance of new stock. Because the issued stock will immediately lose a portion of its value due to dilution, the new stock has to be offered at a discount price relative to the market price, which is the price to which the market price will adjust.

(271) Substituting formula (3) into (2) leads to:

$$MC_t = (S_t + \frac{SUB_t}{P_t^D}) \times Padj_t \tag{4}$$

(272) Solving for the adjusted price:

$$Padj_t = \frac{MC_t - SUB_t}{S_t} \tag{5}$$

(273) Finally, substituting formula (5) into (3) allows me to solve for the number of new shares to be issued.

$$\Delta S_t = \frac{SUB_t}{\frac{MC_t - SUB_t}{S_t}} \tag{6}$$

(274) This means that the total number of newly issued shares equals the amount of the subsidy (desired cash inflow) divided by (market capitalization minus the subsidy amount) divided by the number of shares outstanding (prior to the issuance). Of course, the newly issued shares increase the number of shares for the following year, and so on.

(275) My calculations are detailed in Figure 4 below. I assume Sirius XM will issue new stock on December 31 of each year between 2007 and 2016 and calculate the total number of shares issued over this 10-year period.

Figure 76: Hypothetical cumulative number of Sirius XM shares issued in order to raise funding for payment of royalties at *SDARS I*-determined market rates, 2007-16, in millions [RESTRICTED]

[redacted]

(276) Column B contains the subsidy amount (SUB_t) whose calculation I described in Figure 59. Column C provides the year-end market price for Sirius XM's stock (P_t), and column D details the actual number of shares outstanding (S_t). Using formula (1), column E computes the actual market capitalization of Sirius XM (MC_t).

(277) Column F keeps a running tally of adjusted shares outstanding before each year's issuance, computed by adding the cumulative total (to date) of shares issued through this program (column H) to the actual shares outstanding at that time (column D).

(278) Column G computes the price after issuance ($Padj_t$) using formula (5). Similarly, column H computes the number of new shares issued (ΔS_t) using formula (6). Finally, column I tracks the cumulative number of new shares issued.

(279) My analysis shows that Sirius XM would have issued 2.3 billion new shares of stock in order to raise sufficient funds for the payment of royalty rates at *SDARS I*-determined market levels. At the 2016 post-issuance adjusted price of $2.98 this equals total value of [[redacted]].

(280) Thus, by December 2016, the 801(b) factors have cumulatively contributed 33% to the market capitalization of Sirius XM.[312] Put differently, absent the 801(b) factors, existing shareholders'

[312] [[redacted]].

wealth would have been lower by [[redacted]]. Thus, the 801(b) factors increased existing shareholders wealth by approximately almost a half.[313]

[313] 49.1% = $6.946 billion / ($21.097 billion –$6.946 billion).

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

Date: February 17, 2017

Thomas Lys

Thomas Z. Lys

Exhibits Sponsored by Thomas Lys

Exhibit No.	Description	Designation
SX Ex. 073	Excerpts from Carl Shapiro deposition transcript dated Dec. 16, 2016	Restricted
SX Ex. 074	[Redacted]	Restricted
SX Ex. 075	Excerpts from George White deposition transcript dated Jan. 12, 2017	Restricted
SX Ex. 076	[Redacted]	Restricted
SX Ex. 077	[Redacted]	Restricted
SX Ex. 078	[Redacted]	Restricted
SX Ex. 079	[Redacted]	Restricted
SX Ex. 080	[Redacted]	Restricted
SX Ex. 081	[Redacted]	Restricted
SX Ex. 082	[Redacted]	Restricted
SX Ex. 083	[Redacted]	Restricted
SX Ex. 084	[Redacted]	Restricted
SX Ex. 085	Responses and Objections to First Set of Interrogatories to the Copyright Owner Participants from Sirius XM and Music Choice dated Nov. 22, 2016 , Exs. A-C for Interrog. 4.	Restricted
SX Ex. 086	Time for Three v. Entertainment One, Complaint, Ex. 1 ¶ 8(h), No. 1:17-cv-00329-GBD (S.D.N.Y. Jan. 18, 2017)	Restricted
SX Ex. 087	[Redacted]	Restricted
SX Ex. 088	[Redacted]	Restricted
SX Ex. 089	[Redacted]	Restricted
SX Ex. 090	[Redacted]	Restricted
SX Ex. 091	[Redacted]	Restricted
SX Ex. 092	[Redacted]	Restricted
SX Ex. 093	[Redacted]	Restricted
SX Ex. 094	[Redacted]	Restricted
SX Ex. 095	[Redacted]	Restricted
SX Ex. 096	[Redacted]	Restricted
SX Ex. 097	[Redacted]	Restricted
SX Ex. 098	[Redacted]	Restricted
SX Ex. 099	[Redacted]	Restricted
SX Ex. 100	[Redacted]	Restricted
SX Ex. 101	[Redacted]	Restricted
SX Ex. 102	[Redacted]	Restricted
SX Ex. 103	[Redacted]	Restricted
SX Ex. 104	[Redacted]	Restricted
SX Ex. 105	[Redacted]	Restricted
SX Ex. 106	[Redacted]	Restricted
SX Ex. 107	[Redacted]	Restricted
SX Ex. 108	[Redacted]	Restricted
SX Ex. 109	[Redacted]	Restricted
SX Ex. 110	[Redacted]	Restricted
SX Ex. 111	[Redacted]	Restricted
SX Ex. 112	[Redacted]	Restricted
SX Ex. 113	[Redacted]	Restricted
SX Ex. 114	[Redacted]	Restricted

Exhibit No.	Description	Designation
SX Ex. 115	[Redacted]	Restricted
SX Ex. 116	[Redacted]	Restricted
SX Ex. 117	[Redacted]	Restricted
SX Ex. 118	[Redacted]	Restricted
SX Ex. 119	[Redacted]	Restricted
SX Ex. 120	[Redacted]	Restricted
SX Ex. 121	[Redacted]	Restricted
SX Ex. 122	[Redacted]	Restricted
SX Ex. 123	[Redacted]	Restricted
SX Ex. 124	[Redacted]	Restricted
SX Ex. 125	[Redacted]	Restricted
SX Ex. 126	[Redacted]	Restricted
SX Ex. 127	[Redacted]	Restricted
SX Ex. 128	[Redacted]	Restricted
SX Ex. 129	[Redacted]	Restricted
SX Ex. 130	[Redacted]	Restricted
SX Ex. 131	[Redacted]	Restricted
SX Ex. 132	[Redacted]	Restricted
SX Ex. 133	[Redacted]	Restricted
SX Ex. 134	[Redacted]	Restricted
SX Ex. 135	[Redacted]	Restricted
SX Ex. 136	[Redacted]	Restricted
SX Ex. 137	[Redacted]	Restricted
SX Ex. 138	[Redacted]	Restricted
SX Ex. 139	[Redacted]	Restricted
SX Ex. 140	[Redacted]	Restricted
SX Ex. 141	[Redacted]	Restricted
SX Ex. 142	[Redacted]	Restricted
SX Ex. 143	[Redacted]	Restricted
SX Ex. 144	J.P Morgan, "Sirius XM Radio Inc., Continue to Like the SIRI Story and Future Growth Drivers; Establish $5 Price Target," February 2, 2017	Public
SX Ex. 145	[Redacted]	Restricted
SX Ex. 146	[Redacted]	Restricted
SX Ex. 147	[Redacted]	Restricted
SX Ex. 148	[Redacted]	Restricted
SX Ex. 149	[Redacted]	Restricted
SX Ex. 150	[Redacted]	Restricted
SX Ex. 151	[Redacted]	Restricted
SX Ex. 152	[Redacted]	Restricted
SX Ex. 153	[Redacted]	Restricted
SX Ex. 154	[Redacted]	Restricted
SX Ex. 155	[Redacted]	Restricted
SX Ex. 156	[Redacted]	Restricted
SX Ex. 157	[Redacted]	Restricted

Exhibit No.	Description	Designation
SX Ex. 158	[Redacted]	Restricted
SX Ex. 159	[Redacted]	Restricted
SX Ex. 160	[Redacted]	Restricted